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South Ridge of MT. ST. ELIAS from 10,000' Camp 9.

THE
AMERICAN ALPINE JOURNAL

VOLUME VI 1947 NUMBER 3

Yahtsétesha

MAYNARD MALCOLM MILLER

AS far N. as one can go in Southeastern Alaska, before the Panhandle fades and the International Boundary swings poleward, lies what has been referred to as the greatest ice mountain in all of North America. For centuries the Indians of the coast called it Yahtsé-tesha, "the mountain away back of bay, from which water flows." Dominating the whole eastern rim of the gulf of Alaska, this 18,008-ft. summit became quite naturally to these natives a guiding compass, their weather prophet, and the home of their spirit god. White men's interest in the mountain began in 1741 when Vitus Bering sighted it from the *St. Peter,* about 120 nautical miles away.[1]

Rising higher immediately above sea level than any other mountain on the globe, it is now remembered also, with the range of its name, as lying in the midst of the greatest mass of glacial ice anywhere outside the Arctic and Antarctic regions. In appearance its steep pyramidal summit and great W. shoulder are not unlike the classic view of Everest. Small wonder that Mount St. Elias beckoned the first mountaineering expeditions to Alaska, and that it has had a long and fascinating reputation abroad as well as in America.

At least nine expeditions have tried to reach its summit; but only one, led by the Duke of the Abruzzi in 1897, was successful, making the ascent from the E. via Dome Pass and the Newton Glacier. The first two attempts were made by the Karr-Schwatka party in 1886 and by the Topham-Williams expedition in 1888. The latter group tried for the huge S. W. ridge around Haydon Peak, going in from the Pacific side over glacial terrain which, be-

[1] See F. A. Golder, *Bering's Voyages,* American Geographical Society Research Series, Nos. 1 and 2 (New York, 1922, 1925), I, 92, 93, 271, 332; II, 33, 42.

cause of ice recession, subsequently became Icy Bay.[2] Both these parties proclaimed the S. W. route hardly feasible, compared to what would be encountered on the northern or eastern flanks of the massif.

Inspired by some of Bradford Washburn's recent aerial photographs of this ridge, and fascinated by William Williams' account of the unbelievable country over which one must pass to get into this region from the W., the Harvard Mountaineering Club became interested in an attempt from Icy Bay. Andrew Kauffman, William Putnam, and myself, representing the Wartime Council of the H.M.C., began laying groundwork for such an expedition a full year before the war ended. Our letters discussing preparation went to and from the South Pacific, Washington, D. C., and Italy; and, by the time uniforms were shed, plans were well under way. Realizing that this mountain and the surrounding area offered ideal arctic and mountain conditions for certain types of experiments and tests, several institutions and organizations became interested in the venture. The Harvard Fatigue Laboratory asked us to carry on some extensive physiological tests, including pulse rate analyses and food ration sampling. In addition, the Army Quartermaster Corps and the Army Air Forces asked us to subject a large amount of mountain and cold weather equipment to thermal, functional and structural tests. Being on terminal leave from the Navy and in good position to organize these plans, I was asked to manage preliminary arrangements for the expedition and to that end coordinated final preparations by the time our party was assembled in Yakutat, Alaska, on the 12th of June.

These plans had been laid for a party of eight. In addition to Kauffman, Putnam and myself, the members were William Latady, this year's president of the H.M.C., who, with Putnam, was to be in charge of equipment; Betty Kauffman, Andy's wife, who, with him, was to constitute the food committee; Dee Molenaar, of Los Angeles, who joined us as photographer; his brother Cornelius, our meteorologist; and Lt. Benjamin Ferris, of the Climatic Research Laboratory in Lawrence, Mass., who was to act in the capacity of Army observer for the QMC and as medical officer for the Fatigue Laboratory. All in the party are members of the American Alpine Club, and have had considerable experience in

[2] William Williams, "Reminiscences of Mt. St. Elias," *A. A. J.*, IV, 355-61.

other expeditions to Alaska and Canada, to the Alps and to Peru. Oddly enough, four past presidents of the Harvard Mountaineering Club were included in the roster.

The Tenth Rescue Squadron from Anchorage had been assigned to give us air support in order to conduct a series of practical training exercises and to experiment with rescue operations recently developed by the Army. For this reason we spent four busy days in Yakutat repacking the hundred-odd bundles of freight shipped from Seattle six weeks before. A ton and a half of food and equipment was apportioned into 64 different packages, all thoroughly tagged, with snow-streamers attached, for aerial delivery at three separate pre-arranged camps. Captain Roy Holdiman and one of the Rescue Crews had brought a DC-3 down from Anchorage, so we made a two-hour reconnaissance flight over the peak with the midnight sun for light. The next morning a conference was held on procedure and emergency signals before the plane flew back to Elmendorf Field and we resumed our packing. Another 3000 lbs. of gear was stowed on board the *Grace N.*, a 40-ft. fishing boat which was to take us the 65 miles up the coast to Icy Bay.

Finally, on the night of the 16th of June, preparations were completed to set sail. All were anxious to get the ocean voyage over with and to land for the attack. It had been raining ever since our arrival in Yakutat, and the weather was not ordained to get better. A wicked night of tossing waves and driving rain let us know the expedition was launched in a storm. The small skiff being towed along behind was torn from its mooring five times during the night, and nearly everyone on board became miserably seasick before daylight broke.

A 12-hour run found the *Grace N.* dodging icebergs in the mouth of Icy Bay; and at noon, still in a soaking rain, we unloaded supplies onto a barren sub-arctic beach nearly obscured by low-lying fog. Originally the plan had been to cruise far up into the bay and land near the discharging fronts of the Guyot and Tyndall Glaciers, but pack ice and a bad wind prevented unloading any farther inside than a spit near the first large glacial river descending from the Malaspina Ice Cap. We had felt quite lucky to be able to land far enough in to escape having to cross this river. Then, in trying to relay loads farther up the eastern shore, we discovered another glacial torrent well over 100 ft. wide and much too deep to ford. Our dismay can be imagined. This meant that we were to

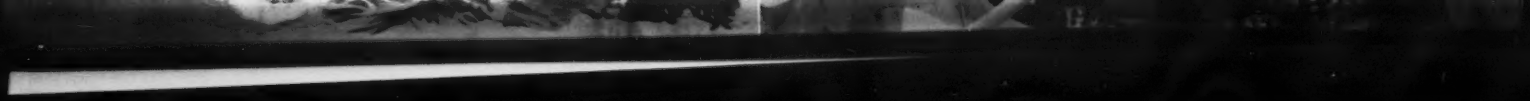
spend three days setting up the first camp and crossing this torrent one mile farther on. Putnam and Dee Molenaar hiked nearly to the headwaters of the stream; and by wading chest-high, roped, they crossed the river. On the evening of the 18th they had constructed on the opposite side of the stream a huge stanchion from boulders and prehistoric wood recently uncovered by stream action on the glacial outwash plain. A similar imposing structure had been fashioned on our side. By rigging a Tyrolean traverse between this elaborate set of supports, and by using five nylon climbing ropes and a combination of carabiners and reepschnur, we were quite successful eventually in passing all equipment and personnel across the hundred feet of rushing water. Putnam supplied the appropriate name: "Colossal Creek."

Camps Two and Three were then set up in rapid succession on the N. river bank and on a jumbled morainic hill bordering the bay, but still three miles from the ice fronts. It was necessary to make time from here on if we expected to be at the base of the mountain on the day of our first scheduled aerial drop. It was a long four miles from Camp Three, which we later considered as Base Camp, to the location of Camp Four at 1000 ft. on the N. W. extremity of the Chaix Hills. There we could at last look down on the dirty broken ice of the Tyndall Glacier, our route into the interior. This camp we affectionately named "Palm Beach," because of the beautiful little glacial bathing pools near-by, in which some of us braved the chill and bathed. From here it was 14 miles to the actual base of Haydon Peak, an 11,920-ft. summit which we had to traverse before getting onto Mount St. Elias itself.

Heavy relaying went on while Latady and I went out for a three-day reconnaissance to find the most feasible route up the broken and heavily crevassed Tyndall. Good fortune prevailed the morning we left; the skies opened up, and a week of sky-blue weather came on. The great bulk of St. Elias and its neighboring peaks, so imposing in bold, icy relief above, made us begin to realize as never before the magnitude of the job ahead. Three relays of 80 lbs. each were made between camps Four and Seven. Camps

ON THE SUMMIT (18,008 FEET), 16 JULY 1946
Left to right: Miller, Latady, Ferris, Mrs. Kauffman, C. Molenaar, Kauffman
Photo, H. M. C.-D. Molenaar

IN ANCHORAGE, 6 AUGUST 1946
The H. M. C. party with some of the 10th Rescue Squadron personnel. Front row, left to right: Latady, Miller, C. Molenaar, Mrs. Kauffman, Kauffman, D. Molenaar. Rear row, left to right: Lt. Ferris, Capt. H. Klimetz, Capt. L. A. Freeman, Capt. R. L. Holdiman, Maj. C. E. Mosse, Sgt. J. Blankenship, S/Sgt. R. T. Amon, T/Sgt. H. Hartman, T/Sgt. R. Naseth, T/Sgt. E. C. Guttridge. Putnam had remained in Yakutat
Photo, H. M. C.



HMC

10th RESCU
SQUADRO

Five and Six, being situated in the midst of the Tyndall Glacier, were surrounded for miles by a maze of crevasses and séracs. The camps were a full day's march apart with a fair load, Five being at 1500 ft. and Six at 2000 ft. The glacier reconnaissance showed that we must skirt three sets of tremendous icefalls and do a great deal of backtracking and cross-cutting before reaching the June snow line and the easier going on the upper reaches of the glacier. We travelled the white ice as much as possible. Sometimes it was necessary to do some technically fancy climbing even on this low-level ice stream, and at all times it was necessary to go roped. There were numerous questionable snow bridges, all to disappear and leave great gaping holes by the time we were to come out along this route some weeks later.

Camp Seven, at a little over 3000 ft., was consolidated on the 27th of June with the first receipt of supplies from the sky. Here, on a gently sloping acre of snow, Captain Holdiman and his crew dropped by free fall and by parachute 1200 lbs. of gear. This camp was thereafter considered a veritable Shangri-La, well stocked and situated on a small, isolated grassy swath at the base of our climbing ridge, in the midst of an infinity of ice, snow and jagged rock, all surrounded by unexplored peaks as precipitous and awe-evoking as any on earth. Here also we had incomparable skiing and ptarmigan hunting, and 15 varieties of mountain flowers, and a mat of heather six inches deep: a little world in itself, forgotten by the ice age and left intact for us. As we looked up and saw the 15,000 ft. yet to be climbed, somebody may even have said, "Let's stay right here for the summer." From here on, the real ascent began. But, with a well consolidated base and enough food for several weeks on the ridge, no one was unduly pessimistic.

While the others were making one more relay from Camp Six on June 28th, Putnam and Kauffman scouted the steep rock ridge above Seven, reaching about 6000 ft. Their report was not encouraging. In order to make sure of getting to the next scheduled drop site on time, Latady, Putnam and I started up on the following afternoon, each carrying a 60-lb. load including enough food for four days. The route lay up a rotten rock and snow ridge to the 7300-ft. level. Topping this ridge at sundown, we negotiated a few hundred feet of extremely steep and loose sandstone cliff and

CAMP 7—"HEATHER MEADOW" (3000 FEET)
Note AAF test tents. Mount Huxley (12,560 feet) is in the background
Photo, M. M. Miller

HAYDON RIDGE CAMP (10,300 FEET)
Photo, M. M. Miller

came out on a shelf of low dipping but badly shattered shale, an ideal spot for the establishment of Camp Eight. After placing an orange marker and throwing down 200 ft. of fixed rope, we crawled into a mountain tent and got some rest.

In the morning a cloudless sky permitted a clear view of the route ahead—leading along the glaciated rim of a huge cirque curving for miles around to the summit of Haydon Peak. Looking down into the great basin below, we were glad that the original plan to drop supplies here had been changed. Not only was the cirque floor a thousand feet down; in addition, it was so broken as to be utterly impractical for a drop area. Furthermore, it was continually bombarded by avalanches, especially on the kind of day ahead of us, with intense glare and softening snows. While the others began a relay of loads to this point, we moved on and upward along the steep western edge of the cirque, through a maze of crevasses and beneath a huge avalanche face. There was no alternative route. Here, on two occasions, large avalanches of soft wet snow slithered down over a sheer base of blue ice and nearly inundated us. It seemed as if pressures had been built up everywhere at the same time, causing the whole mountain to spit forth at once. Having crossed one narrow couloir just 30 seconds before it became a nozzle spouting another avalanche out into space, we decided that from here on travel under such conditions should be limited to night. But, with a rendezvous to make on the morrow, we could not wait for nightfall. With great care we mounted another 2000 ft. of steep snow, scree, mixed ice and arkose and conglomerate cliffs. By late afternoon, through knee-deep, sun-softened snow that required more fixed ropes at two bad spots, we punctured a cornice at 10,000 ft. and emerged onto the great long Haydon Peak ridge. Here, at least, there was no avalanche danger, and hard packed snow lay beneath our feet.

Dusk had fallen before Camp Nine was dug in at the juncture of this ridge and the 2000-ft. summit dome of Haydon Peak. In the lingering sub-arctic twilight, at 11, we hiked without loads to a position on the steep N. slope of Haydon Peak, whence we could look into the 10,000-ft. col between this mountain and St. Elias, the pre-arranged location for our second aerial delivery. With

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APPROACH TO ST. ELIAS VIA THE NORTH SLOPE OF HAYDON PEAK
Haydon-St. Elias col (10,000 feet) is in left background
Photo, H. M. C.-D. Molenaar

SECOND DROP AREA: CAMP 9 (10,300 FEET)
St. Elias is on the left, and Haydon Peak on the right
Photo, H. M. C.-D. Molenaar

one glance we saw it was much too sheer and heavily crevassed to receive any loads from the air. Half would be lost in holes or down the steep bordering cliffs, and also the col seemed too exposed to avalanches from the ice faces on either side above. Returning to our tent, we made the decision to tramp-in a 100-yard drop square on the smooth snow at the very top of the cirque ridge, and to use that location for the drops. This meant an early rise to get our work done before the DC-3 should arrive.

At 7 A.M. we were awakened by the soft, sickeningly ominous patter of dry powder hitting the tent wall. A southeaster had descended during the night, obscuring all tracks of the day before, and making visibility zero. A silent shift of wind and a thickening atmosphere the evening before had given forewarning, but we had hardly expected the storm to blow in so soon. At 10 A.M. the plane was heard high overhead, but of course it was useless. Again at 2 P.M. it tried to get through, and later on in the evening a reassuring sound of motors could be heard, far off in the distance. As our radio refused to function, all that we could do was wait. For seven dreary days this continued, with the Rescue Squadron making repeated efforts to get through. We were hardly comfortable—three of us cooped up in a two-man mountain tent, while the snow drifted higher, and our physical condition became more and more stagnant. On the fourth day it cleared slightly in the afternoon, enough so that the tent could be dried out, but unfortunately there was no plane. In the evening, with all food gone, we had to descend to Camp Eight, pick up a bag of 16 man-days of rations, and hurry back up the ridge before morning. Each day, to mark the drop area, we again stamped out the square in newly fallen snow.

On the 8th of July our aerial supplies came through—a day perfect in weather and perfect in coordination. All of the 27 bundles dropped or chuted landed within the marked area, a masterpiece of precision bombing. Most delightful among the discoveries was a package of mail fresh from the States, tied in with two more experimental radios, neither of which was to work. (Having slept with our other Walkie-Talkie for five nights to keep it warm, all to no purpose, I was personally ready to be skeptical.) All communications to plane and ground were made by snow writing, a technique we found later to be very successful, and one which was written up

STORM CLOUDS AT 13,000 FEET, BELOW CAMP 10
Photo, M. M. Miller

GREAT SOUTHWEST FACE AND SUMMIT OF MOUNT ST. ELIAS
The 10th Rescue Squadron DC-3 seen in the middle distance has just dropped supplies at Camp 9
Photo, M. M. Miller

in newspapers all over the country when the Tenth Rescue Squadron brought back its reports.

From Camp Nine we observed the most magnificent avalanches any of us had ever seen—tons of new snow crashing down a two-and-one-half-mile height of the W. face of Mount St. Elias, some of them spewing out into free space for upwards of 6000 ft. After hearing the rumbling avalanche music every night, we found a thrill in seeing whence it came.

After dragging all loads into camp and setting up two new tents, and storing equipment in them and in the "igloo" that Putnam had constructed one day during the storm, we made preparations to go down. Taking to heart our own advice, we took off at 9 o'clock that evening and by travelling all night descended nearly 8000 ft. to Camp Seven. The rest of the party, whom we had not seen for ten days, were asleep at Eight and planned to come up in the morning; but we roused them just before dawn with a fistful of mail and the cautious admonition to travel at night on these higher reaches. This plan, we pointed out, also permitted one to make double time. They had been relaying loads to Eight during the interim, below the storm, and had made several minor ascents in a small chain of rock pinnacles and nunataks E. of Camp Seven, dubbed by the Molenaars the "Morse Peaks" because they looked like a series of dots and dashes coming out of the snow. This left us three with the last relay loads to bring up from Shangri-La two days later. It also gave us a chance to bask in sunlight at our heather meadow for a day of recuperation.

On the 11th of July we were all together again at Camp Nine. Dee Molenaar and Kauffman had scouted the ice cliff above the Haydon-St. Elias col to 12,000 ft. and determined that it would "go" with light loads—but safely only if done with crampons and at night. Since the next air drop had been scheduled for the 13th, there was plenty of time to send five men up to consolidate Camp Ten on the 13,400-ft. ledge above the huge face of blue ice leading up from the col. On the 12th the party climbed Haydon Peak and placed the Harvard Mountaineering Club banner on its corniced summit to register a first ascent. An attempt on the col ice face by the two Molenaars and myself that night was rebuffed by lowering storm clouds and wind; however, it cleared sufficiently the following evening for another try. This time, only Putnam and Ferris remained behind to try to establish radio contact with the plane,

while the rest of us started out at midnight with fair loads to arrive no later than 9 in the morning at the lower ledge. The first reconnaissance had shown 1500 ft. of the slope beneath this ledge to be 40 to 60 degrees of blue ice, enough to rouse considerable apprehension; but by chopping a number of steps and using ice pitons with 450 ft. of fixed rope, we avoided suffering too much delay. Some of the slowest and most difficult parts encountered were on stretches of granite wall rock, severely weathered and broken, lying exposed at several spots on the route. The plane arrived an hour after we hit the ledge; it gave us that much time to rest before we had to dig duffle bags and boxes out of the snow. A drop area only 50 yards square could be stepped off here, because the ledge was banked on two sides by sheer ice and rock cliffs and on the mountain side by wide bergschrunds and crevasses. After one of our group fell in a crevasse in the middle of camp, no one walked very far without being roped.

Because of the exposure, the smallness of the drop area, and the fact that a lingering cloud blew in on a sudden strong blast, just as the last boxes were being dropped from the plane, a miscalculation occurred; and 32 man-days of food went down the eastern cliff. Two food boxes exploded on contact with the 70-degree ice, and some of the contents cascaded perhaps 9000 ft. to the Libbey Glacier below. Our grief at this loss was somewhat assuaged by a surprise package of four large and luscious apple pies, carefully packed in sawdust, and dropped with the compliments of the Yakutat Bakery. But morale hit a low ebb when we realized that nothing could be salvaged from the loss and that it looked as if another storm were threatening to break. With six days of supplies on hand, we could make it if good weather prevailed; but the margin of safety was slim. We decided to put out the yellow tarp emergency marker and signal for the emergency rations stored in Yakutat. The plane made one more pass over camp on its way to Anchorage and "rogered" recognition of our appeal, just as the rapidly forming clouds came down in earnest. Decision to move up no longer hinged on weather or aircraft. It became essential to get to the high ledge at 16,000 ft. and dig in a camp as soon as possible. Then, with the first break in the weather, we could push on to the summit. At least, in this way, we should have enough food to last out a short storm and get back to the ample supplies at Camp Nine. The wind-blown mist closed in and prevented further activity that evening.

At 7 A.M. Putnam and Ferris arrived in camp with more gasoline and some extra food. Being already somewhat acclimated, the rest of us moved up with very heavy loads through deep soft snow to see what could be done about a high camp. Breaking out of a dense ceiling at 15,200 ft., we climbed 400 ft. higher and made camp at sunset in zero temperature. Not until later did we realize that our tents were pitched on a huge cornice overhanging the mountain's S. face. This we came to know as Camp Eleven, High Camp, or the Upper Ledge.

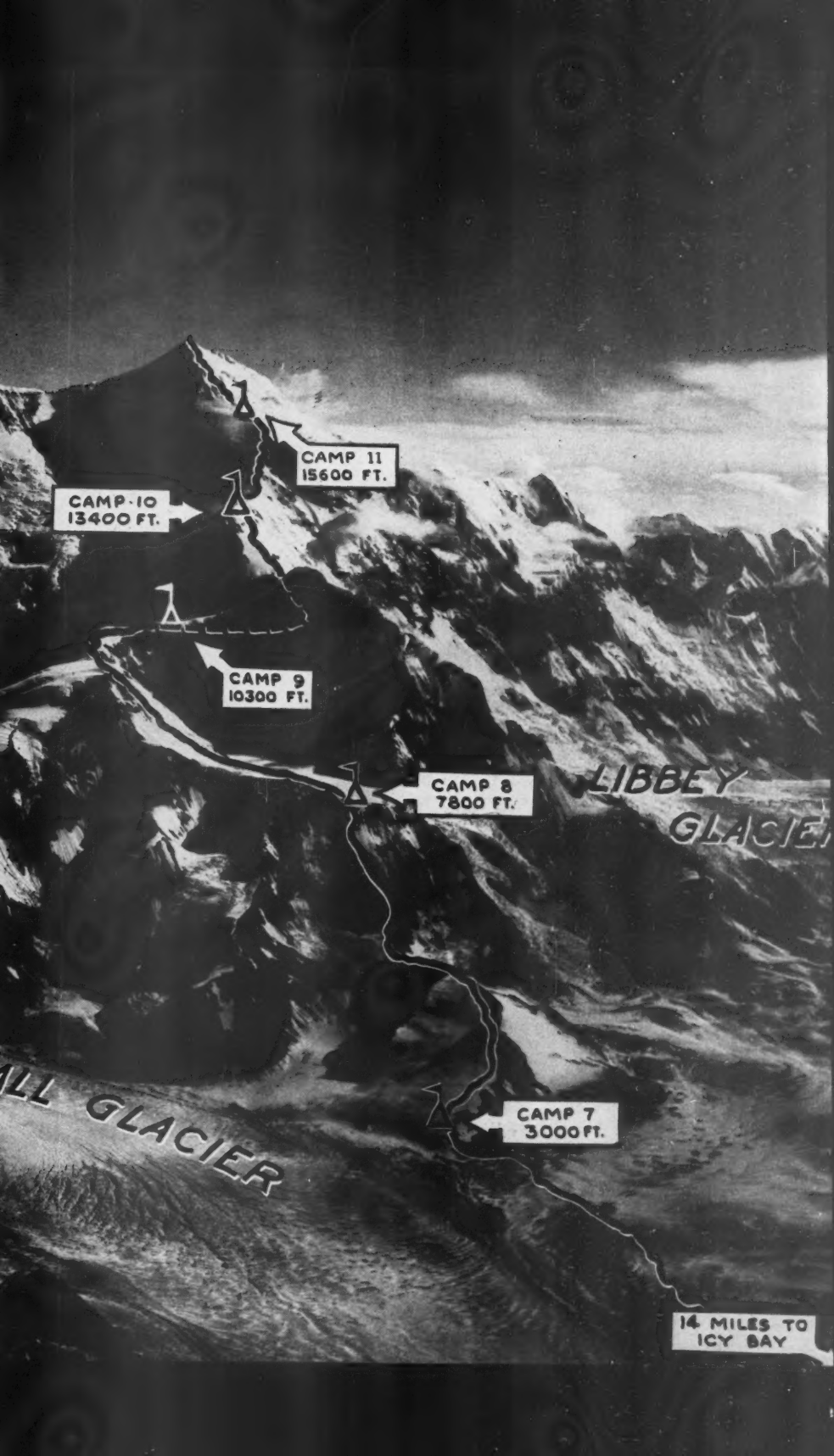
On the following day the other two climbed up from Camp Ten and joined us in waiting for better weather. An abortive attempt was made to reach the final rock ridge leading to the summit from this high ledge, but more wind and thick clouds made it too hazardous even to cross the upper shelf. The lead man's fall into a large crevasse from a collapsed snow bridge made us decide to turn back and wait out another night of freezing cold. Actually, this additional rest was welcome, for we all needed more acclimatization after the strain of recent heavy loads.

It was the 16th day of July. I awoke at 5 A.M. and—with fingers crossed—undid the tent flap for a look. Thin wisps of cloud covered the summit. Ominously, the steep black rock ridge was trailing plumes of wind-blown powder. The overhead was clearing. Soon, in the other tents, could be heard the mumble of voices from the warm sleeping bags; and it was not long before all were awake to the signs. A 40-mile-an-hour wind was shifting to the N., still bitter cold, but hardly discouraging. If bad weather had continued for two more days, we should have had to turn back; but, thanks to Providence, here was the break we had hoped for. It was about 7 o'clock before the sun's rays hit camp and drove off the unbearable cold, and by then we were roped up and away. A cloud layer below at 12,000 ft. was still black and churning around the dwarfed 12,000- to 14,000-ft. summits of Mount Huxley, The Hump, Haydon Peak and Mount Augusta; but the atmosphere overhead was crystal-clear.

At the start, we began alternating leads to save ourselves for what looked like severe pitches on the rock and ice ridge above. As we hit the steep rock rising up from our 16,000-ft. ledge, Putnam, because of a lung injury received while he was with the Mountain Troops in Italy, reached his ceiling and had to turn back to High Camp. Consolidating now on two ropes, we moved slowly and

MOUNT ST. ELIAS
The route of the 1946 expedition
Photo, B. Washburn

TYNDALL
B. Washburn


CAMP 11
15600 FT.
CAMP 10
13400 FT.
CAMP 9
10300 FT.
CAMP 8
7800 FT.
LIBBEY
GLACIE
CAMP 7
3000 FT.
14 MILES TO
ICY BAY

carefully over several steep rock and ice faces and up through two arduous ice couloirs. At 17,000 ft., more steep rock of firm schists was encountered in 100-ft. stretches requiring delicate balance. This type of climbing we had hardly expected. Several hundred feet higher, there began a series of huge feathered ice bosses similar to those described as being on parts of the Kangchenjunga ridge. It required much time to cut up and around these bosses. Two more vertical ice funnels called for fixed ropes, also to aid us on the descent. Between the sets of feathered ice humps we found ourselves foundering in pockets of snow nearly waist-deep, grading off into steep avalanche slopes. It was essential to alternate the leads every length of the rope.

The summit itself was achieved via a short snow arête leading up from a small ledge of ice that required carefully chopped steps. With five more feet of slack, the first rope was on top, followed a few minutes later by the second. Ten weary but exciting hours were completed as we all stepped on the highest mound together at 5.30 P.M. Temperature was still zero, but a wind of only 30 miles an hour whipped the H.M.C. flag planted on a jeep aerial at this point. The summit is no more than 100 yards long and perhaps 50 wide, dropping off steeply on all sides. Thirty miles to the E., Mount Logan's elongated and massive bulk pierced the cloud layers at its base, appearing more like a whole range than like one mountain. The other giants of the St. Elias Range could be seen, but were disappointingly diminished when looked upon from this height.

Before starting down at 7 o'clock, we unfurled and photographed the American and Canadian flags donated by the Arctic Institute of North America to be planted here where the International Boundary passes over this remote and little known point between Alaska and the Yukon. The fact of the extension of our friendly border into this fantastic and unapproachable area was most impressive.

On the descent our route was for the most part in shadow, and we were able to make good time on steep crampon snow, skirting some of the worst stretches of the ascent. We were back at the 16,000-ft. shelf a little after 10 P.M. and arrived in camp just as the sun passed behind the great W. shoulder. Sleep was welcome and undisturbed that night. The only misfortune of the ascent to be recalled was that Latady's toes were severely frostbitten.

On the 17th the plane came over with emergency rations and, circling over the summit, took photographs of the flag left there, and of our steps. Our mission having been accomplished, we signalled that we had no need for supplies and that we should like the boat at Icy Bay in three weeks.

TOP—16th; BOAT 8/4

Seeing this message written in the snow, the DC-3 circled back once more, dipped its wings in acknowledgment, and flew off to the N. W. A day later, the southeaster we had been fearing broke in all fury, piling up several feet of snow and tying us in at the Haydon ridge camp for several days. Bad weather continued during the long trek out to Icy Bay and scarcely permitted a view of the mountain again in the three weeks of descent and return to the coast. Amazing changes in the Tyndall Glacier made this part of the journey infinitely worse than it had been on the way in.

On August 4th, sailing back to Yakutat, we saw the whole mountain again for the first time. It was covered completely with a new and deep mantle of snow, a truly magnificent sight, but impressively reminiscent of the storms, snow, sleet and rain battled all the way down. Most of all, we were mindful of the good fortune which had allowed us to make the top just in time.

Upon being welcomed in Yakutat we learned a strange fact: July 16th, the day on which clear skies had put us on top, was not only one month from the day we had left Yakutat, but also the anniversary of the day when Vitus Bering's party had first sighted the mountain over 200 years ago. Moreover, according to the Yakutat missionary, this date was known locally as St. Elias' Day. We like to think that the patron saint had been looking with favor on our efforts.

West of the Stikine

FRED BECKEY

PHOTOGRAPHS of unclimbed Kate's Needle (10,002 ft.) and Devil's Thumb (9077 ft.) led me to plan, for my first post-war opportunity, a trip to the icy wilderness W. of the Stikine River. Although they do not rise so high as the great mountains farther to the N. W., these peaks of the Alaska-Canada Boundary are magnificent in their alpine grandeur and challenging in their technical difficulties. They are enclosed by the great boundary ice-cap, which stretches northward over 75 miles unbroken to the Whiting River, near Taku Glacier. Much of this ice-cap, from which rise countless rock peaks, is virtually unexplored, known to us (so far as it is known) only from aerial photographs. In 1907 the Boundary Commission prepared a remarkable topographic map, but left vast areas blank; and, having observed numerous errors, I should say that the Commission must have surveyed much of the region only superficially. Here, indeed, is one of Alaska's neglected mountain regions, not without mystery. The massive granite shaft of Devil's Thumb, visible from Petersburg, has inspired many mysterious Indian legends; and, to the Stikine tribe, ice-encrusted Kate's Needle is God.

Knowing of Fritz Wiessner's 1937 attempt on Kate's Needle, the first serious mountaineering endeavor, I asked him two years ago about a possible return. Together with Donald Brown, we made definite preparations last winter. Our plan was to make the approach from Wrangell by the famous Stikine River, route of early prospectors to the interior of British Columbia. The Great, Mud and Flood Glaciers all flow eastward from the ice-cap, nearly emptying into the Stikine River, and afford possible approaches to the peaks along the International Boundary. The 1937 party made use of the Flood Glacier, some 70 miles up the Stikine; and we decided to use this approach again, as we could thus reach both Kate's Needle and Devil's Thumb. We considered routes up the Patterson and Baird Glaciers from Thomas Bay (tidewater), but deemed them inadvisable: we had only 18 days. Long, steep ice-falls block the route from the Baird Glacier to the ice-cap near Devil's Thumb, and there are 12 additional miles of difficult travel to Kate's Needle.

On July 9th I met Fritz and Donald in Wrangell, whence Al Ritchie transported us up the swift river in his cozy little boat, en route to Telegraph Creek, B. C. Our big pile of duffel was deposited on a sandbar two miles from the 17-mile Flood Glacier. Immediately we set up a permanent base camp and hung all our food on ropes between two trees, the innumerable grizzly tracks having given us cause for worry. With the hope of avoiding excessive brush travel, we attempted to reach the moraine by the N. side of the Flood River. But after half a mile we became entangled in bad thickets, and we were forced off our course by a river fork. Devil's club and slide alder made the heavy back-packing relays very difficult and slow, and the never-satisfied mosquitoes were almost unbearable. Heavy rain, the plague of the Coast Range, added no little to our troubles. I should mention also that we had to pull our loads across a difficult river ford by Tyrolean traverse, a task that consumed half a day.

By July 14th all our gear was at the moraine, several days behind schedule. Moreover Fritz had sprained his knee in the brush, and we had to consider whether we should even continue. On July 15th Donald and I portered loads seven miles up the glacier, and the next day we all moved camp to a green spur at the glacier's edge, 13 miles from the Stikine. Just when our hopes had risen, inspired by Kate's great 6700-ft. N. face, they were dealt a trouncing blow. While Donald and I were a few miles down the glacier, bringing up the first relay, Fritz tested his knee on a steep slope. The response made it apparent that there was no justification for continuing. We all felt rather disheartened. Weather and lack of time had kept Fritz and Donald from success in 1937—and now this had to happen. We deposited some food and much of our equipment here; Fritz and Donald generously left some of their items, in the hope that I could organize another party for an expedition in August. On the 19th we returned to the moraine and on the next day continued to the river beach, building a crude log bridge at the river ford. I cleared a trail through the forest to facilitate future travel and caught the river boat for Wrangell on the 22nd.

A little telegraphing dispelled my pessimism: Bob Craig and Clifford Schmidtke would hasten from Seattle by the next boat! I bade farewell to Donald and Fritz, who had to return to the States, and spent almost a week with a survey party on the Stikine. My

new party arrived on July 30th, having had only two days in Seattle to get organized. The up-river voyage was rainy, but rain could not dampen our meteoric hopes: all of August was at our disposal. Wet skies delayed our departure from the sandbar, so we spent the time in carefully organizing our supplies and equipment. On August 2nd we packed heavy loads to the cache at the green spur. To our astonishment, the cache, which I had carefully protected, had been rifled. After superficial investigation, which was enough, we indicted some sagacious goats, now browsing on a distant hillside, safe from castigation. The main losses were some delicious cheese, salami, butter and sugar. The greedy beasts even chewed an empty Klim can. Clouds parted late the following morning, and we packed loads to the edge of the 6000-ft. ice plateau, some 3000 ft. above camp, which Bob had renamed "Pilferage Ridge." On the heather slopes we met a flock of ptarmigan. Displaying extraordinary accuracy, Cliff killed three with rocks and thus satisfied our lust for carnal revenge.

On the 4th clouds closed over Kate's Needle, our first objective, but the next day was better. On skis we moved camp four miles across the Flood Glacier to the northern foot of the icy giant. At midnight it began to rain; so we slept again, after cooking oatmeal by candlelight. But the fickle weather changed yet again; and at 7.15 we left camp, much concerned over the lateness of our start. For 3500 ft. our route was along the arête of a steep spur separating two icefalls from Kate's upper slopes. Once a very thin snow bridge gave us the jitters, and later a rotten bergschrund proved troublesome. I placed three ice pitons to safeguard a steep traverse and crawled over a difficult cornice to a healthier spot. The upper portion of the pointed spur was feasible, though steep. At noon we rested and ate some rations. We crossed a long, flat section of the upper glacier in a torrid heat and made our way in excellent time to the ridge W. of the final summits, at 9200 ft. The last 1000 ft. had been most tiring, because most of the snow was knee-deep and unsettled.

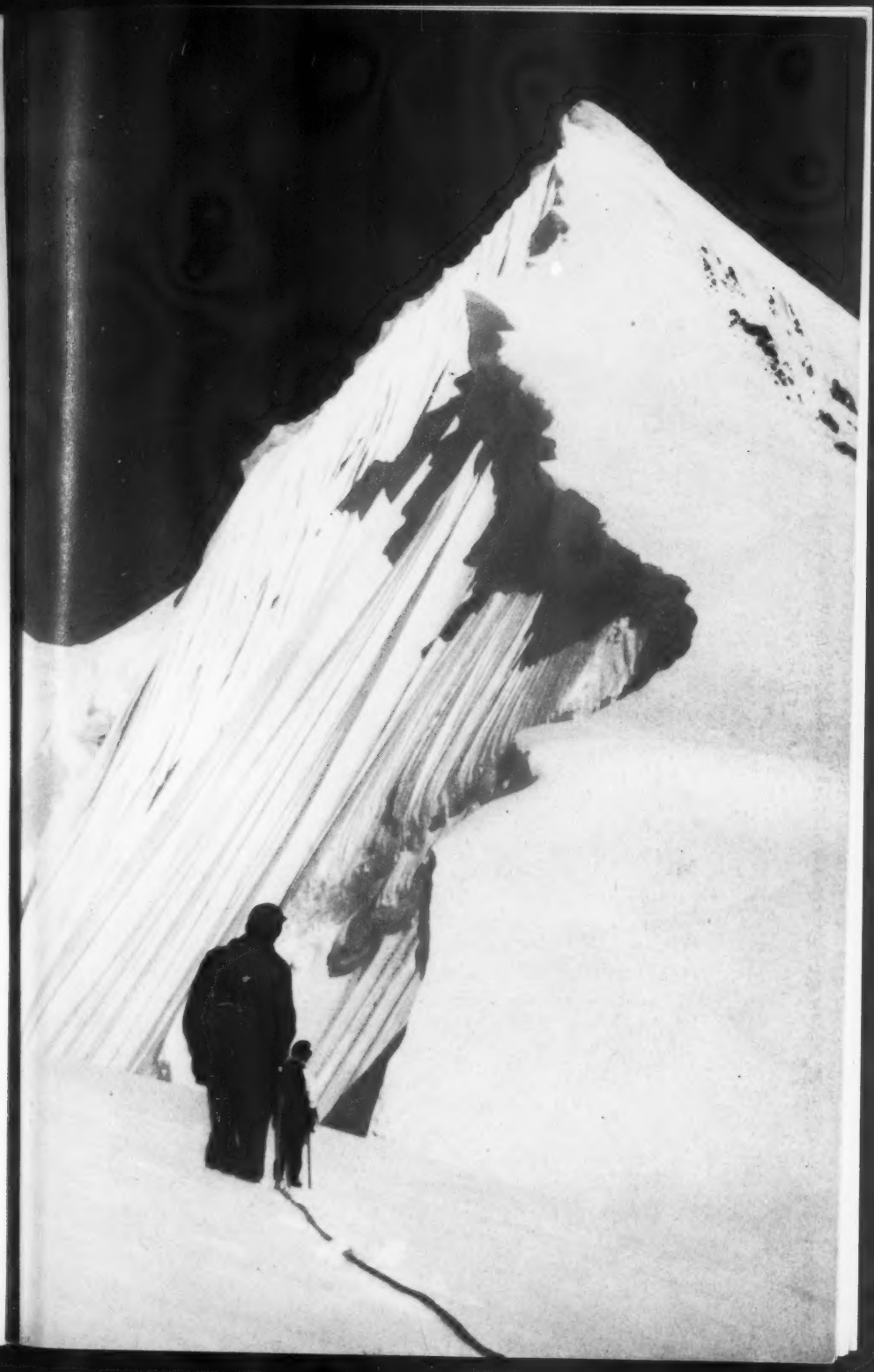
We could now see the quaint trio of ice summits close above us. Tremendous cornices overhung the N. faces. The W. summit had a striking fluted ice-face. Apparently the only route to the center summit was by the S. side, away from cornices and an unconsolidated, very steep leeward slope. All N. slopes seemed powdery and unstable; the wind-crusted S. and W. slopes were safer. We

alternated leads up the ice ridge toward the spiked W. summit, sometimes climbing on wind crust and at intervals breaking through to our knees. The climax of this ridge was a menacing cornice. We traversed several hundred feet to the right and then mounted, kicking steps in steep, firm névé, to the ridge that leads S. from the W. summit. We ascended the narrow snow arête to a point within a few feet of its apex on the W. summit and then began gingerly traversing eastward, constantly belaying. Because the S. face began to drop very abruptly, we had to stay uncomfortably close to the cornice system atop the fluted ice-face. As we passed the draw between the W. and center peaks, difficulties decreased. We quickly kicked steps on thin ice, slightly over 45°, and climbed happily to the summit at 7.

To do justice to our feelings then would be almost impossible. We had, however, little time for exhilaration. It was cold, clouds had enveloped the landscape, and a storm was all about us. We briefly admired the magnificent scenery, especially Devil's Thumb, the region E. of the Stikine, and the great E. face of Kate's Needle dropping to the Mud Glacier. Here we noted an error in the map—the omission of a large glacial cirque to our S. We left a ski pole 50 ft. below the summit, jammed in a rock crack, and began the delicate traverse and descent. Our steps facilitated travel greatly, and we made excellent time to the gentler slopes below 9000 ft. The weather was not so helpful: a howling wind struck the mountain. We ran and waded down the unsettled glacier slope to the top of the spur, becoming engulfed in inky darkness. A light drizzle fell as we moved down in our steps on the 50° spur with flashlights. The rain had made the slope mushy and created an acute avalanche danger. Reconnaissance by flashlight having revealed the impracticability of an alternate route, we descended via the awkward cornice and bergschrund, again using ice pitons. Sleepy and wet, but with some semblance of happiness, we crawled into our tent at 4.30 A.M.

Because of the precipitation we had no incentive to break camp that day, and anyhow we thought we deserved a day of rest before beginning the push for Devil's Thumb, the next objective on our itinerary. On the 8th we skied back to "Pilferage Ridge" and were happy to see that this time the goats had not annoyed our cache. Effective rock barriers would have stopped them, had they tried. On the following day, packing 70-lb. loads up the rocky 3000-ft.

APPROACHING THE WEST SUMMIT OF KATE'S NEEDLE
Photo, R. W. Craig



spur, we established base camp for activities on the plateau, at the site of our earlier cache. We built a rock base on the ice for our tent; and, considering the violence of the weather the next day, we felt that our labors were justified. In such a raging storm as this, we had to postpone our push across the ice plateau to Devil's Thumb. A storm like this one shows the necessity of always being stocked with a safe margin of food. At times travel becomes absolutely impossible.

Three days we spent in sleeping, cooking complicated dishes, discussing philosophy, and reading a volume of Emerson's essays. This delay meant a shortage of food; and on the 13th we left camp intact, enjoyed a 1000-ft. ski chase, and rambled down the glacier in the rain to the Stikine. When we returned on the ensuing afternoon, we were greeted by a chilly snow storm. But the wind that brought it managed also to clear the skies. On the 15th, under a brilliant sun, we skied five and a half miles across the plateau, with heavy loads. Devil's Thumb looked terrific—like a truncated Matterhorn, only steeper. Verglas and ice patches clung to the granite diorite at amazing angles. Binoculars helped us to study our proposed route on the S. face and E. ridge. We pegged our tent at 6000 ft., in a wind-eroded schrund adjacent to a rock wall, and went to sleep with plans for an immediate attempt.

When we left the tent at 3, the sky had become overcast. A warm wind and red sunrise left no doubt of the meteorological prospects for the day. But because of the yet high clouds we decided to make a hasty reconnaissance and laid out a route up the glacier to the S. base of the Thumb at 7000 ft. We crossed the bergschrund by a rotten snow bridge and worked with great care up the crusted 50° névé slope above. Well belayed, we climbed along the base of a rock wall, chopping numerous steps, and then climbed steep rock and ice to the tip of a rock buttress at 8000 ft. Swirling mists soon enclosed the forbidding upper S. face. After pushing onward another 200 ft., we descended again, caching most of our food and equipment at the buttress point. The last hour of our return to camp was very miserable: an icy downpour soaked us. The next day we were still wet and very unhappy.

We arose late on the 18th, expecting the worst, but found our peak "out" and the skies clearing. We left camp at 10.30, fully expecting to be benighted, but hopeful of success. We felt that, if we were to wait another day, the weather might turn bad again—

DEVIL'S THUMB
North Face and East Ridge

Photo, M. M. Miller

and our opportunity would be gone. Again we crossed the rotten bergschrund and climbed the difficult ice and rock to the cache in the early afternoon. Then we continued up precipitous snow and rock slopes on the S. face, carefully belaying the entire distance, to a point at above 8600 ft., just below a notch in the E. ridge. The summit of Devil's Thumb is at the extreme W. corner of the S. face. This extra distance increases the difficulty of attaining it.

Overhangs and verglas seemed to preclude possibilities of reaching the E. ridge closer to the summit, at least for the present. We climbed three rope lengths of wet rock in tennis shoes on the E. ridge, moving several times along the edge of the S. face to avoid impassable ridge steps. Then we were frustrated by a sheer pinnacle, which had previously aroused our apprehension. There appeared to be absolutely no route over or around this barrier, but after some bickering we decided to make an attempt from a subsidiary block and hope for the best. Well belayed by Bob, I set out and began hammering pitons in two tiny cracks on the slightly overhanging left face of the holdless block. The right side of the block was crusted by verglas and not even blessed with piton cracks. I stood on a sling in the highest piton, placed two more pitons, and with the help of slings swarmed over the edge of the block onto an uncertain slab. This was cold exercise: the rock was wet, and the wind was blowing in icy gusts; and we had been in the shade for some time, since night was coming on. Another 15 ft. of slab and I reached the base of the pinnacle, spotting a possibility of traversing the overhanging S. face. After considerable effort I managed to place a key protecting piton and then inched down, along the edge of the pinnacle. With tension and the aid of a knotted sling, I lowered myself obliquely down an awkward overhang and traversed a few feet to the only belay ledge on the outward-leaning face.

Cliff soon joined me on the tiny ledge, now overcrowded; and we stood shivering, eyeing the V-shaped crack leading to the ridge behind the pinnacle. Cliff had Bramani boots, which would be more useful than tennis shoes in the icy crack. An ice piton and a sling helped him over an ice bulge, beyond which he worked up a treacherous slope to a notch in the ridge. He then called that all was well and belayed Bob and me as we moved to his perch. I was happy to put my boots on again, because my feet were almost frozen. Darkness was closing in, so we began to look for a bivouac spot. We worked another 100 ft. up the ridge—Cliff placing sev-

eral safety pitons—and were greeted by an even icier wind. We rappelled down this last pitch to a more sheltered spot, leaving the rope intact for an ascent by Prusik knot slings in the morning. By 11 we had dug a cavity in a snow patch and anchored ourselves. We were in no hurry in this digging: the exercise kept us warm.

Time seemed to pass slowly as we shivered in our cramped habitat. Worse yet, the weather, which had been clear and cold, looked treacherous. When light appeared in the E., we continued our upward climb along the ridge, up a very narrow snow arête to a sharp point. The summit was not unduly distant, but Fate was against us: snow began to fall. Reluctantly we began a retreat, not oblivious of the consequences of being caught in a storm on this exposed ridge. When we reached the buttress at 9, the clouds rifted as suddenly as they had formed—a perfect bluff. We made a frustrating decision to return to camp on account of a general food shortage and the danger of extending ourselves on the ridge in this uncertain weather. We rappelled down the rocks and ice to the bergschrund and made our way back to camp. After a hot meal Bob and Cliff skied five and a half miles to the edge of the plateau for the remainder of our food. They returned after dark.

By noon on the next day a promising young storm had grown into a torrent and wiped out any doubt man might have had of nature's power in this region. The 60-mile-an-hour gale poured rain through the tent all afternoon. Before we devised a system of drainage canals, 14 gallons of water had been passed out the door by the Bucket Brigade. The fury continued for three more days, unabated, and we were glad that our supply of food was adequate. We later learned that the Stikine had risen three feet during this blizzard! Rain had eaten away nearly all our peripheral tent support, and we were sleeping on a tiny, wet citadel. A new worry arose when a crevasse opened four feet from the tent door and Bob almost stepped through. Hopes for success were now rapidly fading, for our deadline was near. Much of our conversation, indeed, had to do with plans for a new assault next year, definitely slated for June. We finally had to repitch the tent, hindered in our efforts by winds, a steady snowfall, and our general stiffness.

On August 24th we awoke to find the weather gloriously clear, but the Thumb towering in powdered whiteness. We climbed to 7500 ft. and, as we expected, found the fresh snow unreasonably hazardous on the steep ice slope. The hot sun melted much snow

off the rocks, however, and we laid plans for a final attempt on the morrow. This would allow little extra time, for we had to catch the boat on the 27th. At 3 A.M. we were off again, and under a crystal-clear sky we made excellent time to the buttress point. For once it seemed that we were due for more than one day of fair weather. We spent some time exploring the possibility of obliquely traversing the great slabs of the S. face to the W., toward the summit; but, because of the fresh and loose snow atop the smooth slabs, I considered it unduly dangerous. Cliff led up the very difficult block, using the previously placed pitons. This time he found the ice piton in the V-crack unnecessary. The sun was strong and the wind negligible. The climbing was enjoyable, except for fresh snow on the rock.

At noon we reached our previous high mark at the snow point, high on the E. ridge, and were elated to see a route more hopeful than we had expected over a sharp ridge step, the last apparent major obstacle. We worked along the ridge, straddling several narrow blocks, and reached a recess at the foot of the imposing ridge step. From a piton belay I traversed left and up, over the overhanging S. ridge rim, using a lateral crack and tiny claw holds, to a fine belay ledge. Then a traverse over steep, snow-covered rock brought us to the crest of the ridge atop the icy step. Now the worst was over. Success seemed certain. We lowered ourselves in turn down an icy, tilted block and then traversed the narrow ridge 600 ft. to the summit, all but forgetting the tremendous exposure. The ice-plastered N. face plummets 5000 ft., almost vertically, to the S. arm of the Baird Glacier. The summit is an airy perch.

We spent a most enjoyable hour, lunching, admiring the glacial vista, studying various peaks and glaciers, and taking bearings. Atmospheric conditions were so clear that Mounts Fairweather and Crillon were plainly visible, 228 miles to the N. W. We regretted that we had no time this summer for Mount Ratz and Mount Burkett, with its satellite needle. Peaks farther N. along the ice cap were attractive, if not spectacular. Several jagged rock peaks fringing the Baird Glacier looked as if they would provide interesting climbs. The Baird would offer a good route to the Mount Ratz area, but steep icefalls make the final approaches to Devil's Thumb difficult. To the E., in British Columbia, we again observed several interesting high summits, in the vicinity of Mount Hickman; and in the opposite direction we could make out the forested chan-

nels and islands of the Inland Passage. We built a cairn on a ledge beneath the summit block and left the customary notes in a can. At 3 we left. We made the descent mostly by roping down. The rappel from the pinnacle was very spectacular: one kept 15 to 20 ft. away from the wall for the last 85 ft. We found the rest of the descent uneventful, but took great care, and reached camp at about 8.

Before leaving camp at 11 A.M. on the 26th, we spent an hour skiing, in wonderful conditions. Skis were a blessing on the plateau; they saved us from much laborious plodding. In beautiful weather we skied to the slopes above the Flood Glacier. The remainder of the jaunt to the river was somewhat tiring, especially in the moraine and the forest, where I had to find the route in the dark. At 2 A.M. we reached base camp, having travelled 20.5 miles. We built a roaring bonfire and watched another glorious sunrise while we devoured a much needed breakfast. In a few more hours Al Ritchie's boat skimmed around the bend on its downstream voyage.

Mount Reliance: Coast Range

HENRY S. HALL, JR.

AS long ago as 1864 Alfred Waddington gave names to a few features visible from the line of his projected road from Bute Inlet up the Homathko Valley through the Coast Range. One peak of about 10,500 ft., which he must have seen from near Waddington Canyon (1100 ft.), he called Mount Reliance. It rises six or seven miles N. E. by E. of the junction of the east and west branches of the Homathko River, and about eight miles N. W. of Mount Queen Bess. From Mount Razorback I saw it clearly in 1932.[1] From an unnamed rock peak on the S. side of the Homathko W. branch, opposite Scimitar Creek, Gibson, Hendricks and I saw it in 1939; Gibson at the time suggested calling it Pagoda Peak. The Mundays and I saw it from the S. end of Tatlayoko Lake in 1942. Harry Haynes, a rancher in the Tatlayoko Valley, who had been out with us that year, said that in 1944 he had taken horses across the Homathko almost to its base. Thus, after the Mundays and I had engaged during the spring in preliminary correspondence about plans for the summer, Mount Reliance seemed to be a worthwhile objective for 1946.

We met at Vancouver and on July 29th took the 9 A.M. boat up spectacular Howe Sound to Squamish, and then the P.G.E. train for the fine ride through the Coast Range to Williams Lake, 20 hours from Vancouver. The familiar ride across Chilcotin Plateau, over a road which had not improved during the war years, brought us, after a night's stop at Alexis Creek, to the Tatlayoko Valley. Despite minor breakdowns we reached Harry Haynes' ranch after dark on the 31st. The next day we spent in repacking food. Meanwhile Mrs. Haynes collected the horses, and Harry shoed them.

On August 2nd we set out in brilliant weather, riding, with three heavily laden pack-horses—this time by trail instead of by water on the lake, because the outboard motor had gone to town for repairs. A passable trail exists on the E. shore of the lake,

[1] See *C. A. J., XXI* (1932), lower photograph opp. p. 95. Mount Reliance is the white peak in extreme right background. Summit is at left of ridge.

kept open by the ranchers to drive their cattle to and from summer range. Tatlayoko Lake is 2700 ft. above sea level, and the peaks rise abruptly to 7000 ft. on the E. and to 10,000 ft. on the W. and S. shores. The lake is 14 miles long and about one mile wide, and it is the source of the Homathko E. branch. We camped the first night less than two miles from the S. end of the lake and had a fine look through the glasses at the upper half of Mount Reliance, about 15 miles away. We picked a route which later turned out to be correct. The second day, after we had forded the clear outlet of the lake to its N. W. (right) bank, took us to the end of the easy going, at one point through small forest fires, pretty certainly set by men to burn off timber and increase feed for the cattle. We were now directly under Homathko Peak (10,200 ft.) across the narrow main valley, and about four miles beyond Stonsayoko Creek, up which we had back-packed for Mount Queen Bess.

A day was spent in reconnaissance of a possible route for horse travel, in the morning near the river by Harry and me, and in the afternoon higher up by Don and Harry. After a day of delay for rain, the only bad weather of the trip, we moved another couple of miles on the morning of the 6th and made further reconnaissance in the afternoon. Harry and Muriel Haynes came back after dark and said that we could not continue far down the right bank. Next morning we forded and made two more miles down the left bank, with the horses, to an impasse where rock slides came directly into the river. Don and I reconnoitred and found rough country ahead, while Harry and Muriel took the horses back across the river. She was to stay with them while he helped us with the back-packing up to a climbing camp. Our base camp was at about 2300 ft., directly on the shore of the swiftly flowing Homathko, which is here about 200 yards wide.

It took two days to reach high camp at 5300 ft., just below tree-line. First we had a moderate day, with 50-lb. packs, along the river and up over a wooded rocky spur and down into what we called Reliance Creek, which drains the glaciers between Mounts Homathko and Reliance. The next day brought very tough going—a log bridge over the roaring creek, and then three hours through an alder slide. Don and Harry cut while Phyl and I relayed the packs. After lunch came six hours of as difficult uphill packing as any of us had ever encountered: smooth rock slab, stretches of easier wooded going, then steepening wood, then a

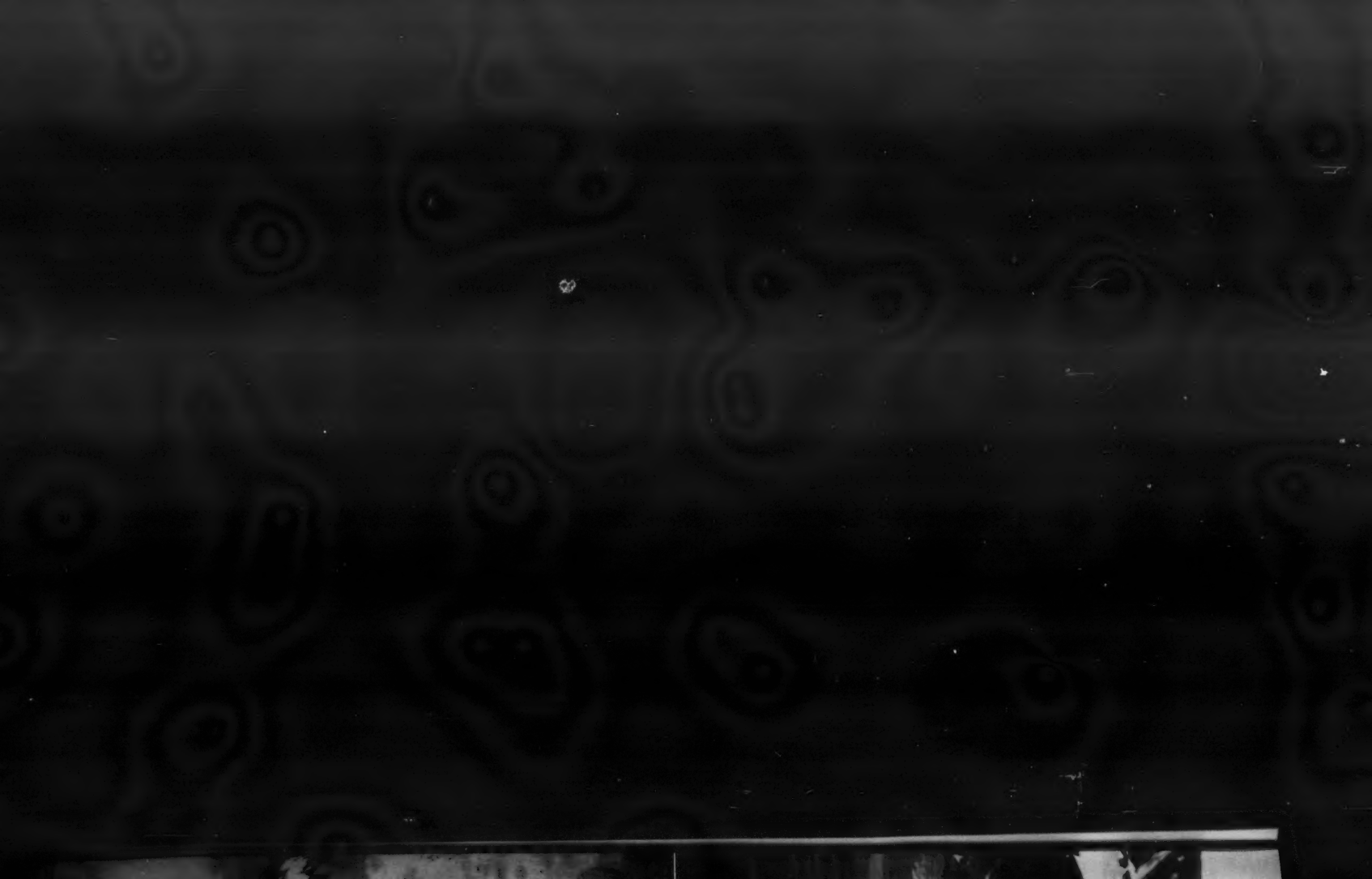
nasty slab traverse with precarious footing, then a series of small cliff bands, sometimes moss-covered, oftener bare. The average angle was such that for two hours there was no chance for a relaxed rest. Each of us would sit on the up side of a tree and put down his pack as best he could, always holding on to it. Finally, as we began to anticipate a waterless night, the slope began to ease off. Pretty well exhausted, we camped beside a small, clear stream only a couple of hundred feet from a site we had picked from 2500 ft. below. On this beautiful spot we rested for a day, except that Don and I made sure of the route to the glacier, to connect with what we had seen from the lake. I slept under the stars, as I did during the whole trip, save on the two rainy nights. Above: the great N. E. shoulder of Reliance. Below: the deep, distant roar of the main river. To the E.: bare ridges beyond the lake. To the W.: Mount Success, bold and glacier-clad in the angle between the Homathko branches.

We climbed on August 11th. Don, Phyl and I left camp at 5 A.M. (Pacific Standard Time). An hour brought us to steepening snow slopes, across which I led to the ice-chute trough bordering the main glacier tongue. While the others kept an eye on the overhang above, I cut 30 steps; and we were on the snow-covered ice. The route required some selection but was not difficult. We worked up the broken ice and snow quite steeply into a névé basin at 8500 ft., where Don took the lead. Crossing this basin, we came to a sudden drop of perhaps 3000 ft. A 200-ft. ice-cliff from the upper glacier plateau of Reliance overhung this cirque. Beyond rose Mount Queen Bess, so steep in the morning light that we could hardly believe that we had climbed it four years before. Our route on it remained in the shade until just before noon.

A short rock ridge took us from the basin at the crest of the cirque onto the upper plateau at about 9000 ft. Ahead of us, over the steeply undulating névé, rose the main ridge of Reliance. We could not be sure from here whether the left end or the right would turn out to be the higher. At 1 P.M. we climbed up onto the crest. To our left rose rock, good granite, for another 125 ft. After seven hours almost entirely on snow, this was a relief, even to our party who always enjoy a good snow and ice climb. Half way up the fairly easy rock, we were startled to see a chipmunk scrambling up the almost vertical lichen-covered rock to our right. How or why this little animal had come up 5000 ft., over glacier and rock

SUMMIT OF MOUNT RELIANCE

Photo, Phyllis Munday



faces, to a point several miles from vegetation, we were at a loss to explain. Anyway, there he was, about to take away our first ascent. Or had he done it before? He did not bother to go quite to the top!

At 2 P.M. we stepped up onto a sloping, lichen-covered slab, 25 by 15 ft.—the summit. The peak at the W. end of the summit crest, perhaps half a mile away, appeared to be about 20 or 30 ft. lower. The view was truly magnificent. Nothing like it is ever seen in the Rockies. From 10,500 ft. we could look down to the waves in the rapids of the Homathko, 9400 ft. below, and, beyond and just to the right, up to 13,260-ft. (or higher) Mount Waddington. At our feet to the E. was an almost vertical 5000-ft. drop; and beyond, a glacial pass leading over to Mantle Glacier, up which we had come to Mount Queen Bess. Light, fluffy clouds floated past, obstructing sections of the view but lending enchantment to the scene. The air was warm and still. We lay out on the rock, when we were not busy with photography or observation, and even talked of spending a night on top, as we had done on Mount Combatant (12,400 ft.) in 1933. To the S. and W. the dark trenches of the main and side valleys, and the rock peaks, were all that interrupted the vast expanse of snowfields, out of which myriad glacier tongues issued into the valleys. Here, in one sweep, were more examples of the varied phenomena of glaciation than one could find in seasons of climbing in other ranges.

Regretfully we started down at 3.45, and at 7 we reached camp. We found that our morning's route had twice been swept by avalanches. At the end of a day of rest came one of those superlative sunsets that set one's blood tingling with the magnificence of nature: to the E., heavy showers; to the W., above the darkening crest of Mount Success, a widening line of blue sky, bordered by gold, rimming a dark band of cloud the center of which was a wildly flaming mass of red and orange such as we had rarely seen; far below, in the gathering darkness, the steady, deep roar of the cruel glacial river, rushing relentlessly on its destructive course to the sea, 40 miles away.

On our way out several days later, instead of following the lake shore, we travelled up over Potato Mountain to the E., camping at 6500 ft. At sunset we walked up to the precipitous escarpment

SOUTHEAST FROM THE SUMMIT OF MOUNT RELIANCE
Mount Queen Bess is over Munday's head
Photo, Phyllis Munday

MOUNT RELIANCE FROM MOUNT QUEEN BESS
Photo, Don Munday

facing Tatlayoko Lake. Harry stalked and shot a deer, which it was permissible for him to do, even out of season, as the holder of a miner's and trapper's license. We had had almost no meat and were feeling the lack of it. Mounts Waddington and Tiedemann stood out magnificently, 40 miles away. This may be the only place easily reached by trail where they can be seen. More than 4000 ft. below stretched Tatlayoko Lake, and behind it great peaks to the W. and S. To the E. we could make out the hills more than 100 miles away across Chilcotin Plateau. Mounts Tatlow and Taseko rose bold and almost bare beyond hardly visible Chilko Lake. To the N. stood the "Archie" and Rainbow Ranges. In the morning we came back and sat for hours. Such a view has no equal in the Rockies.

Returning to camp we passed some of the valley cattle on summer range, and we enjoyed deer liver for supper. Next day, the 18th, we moved along the high ground and in the afternoon wound down into the main valley. Its ranches were distinctly visible for several hours before we reached the valley floor. We came in to Harry's place at dusk, well satisfied. I had never seen finer weather in my eight seasons in the Coast Range, nor had the Mundays in their fourteen.

Mount McKinley from the North and West

BRADFORD WASHBURN

EVERY one of the five expeditions which have succeeded in climbing above 15,000 ft. on Mount McKinley has used almost exactly the same route for the ascent.

The actual summit of the South Peak of Mount McKinley has been reached but three times—in 1913 by the Stuck-Karstens expedition, in 1932 by the Lindley-Liek party and in 1942 by the U. S. Army Alaskan Test Expedition. In 1912, however, the Parker-Browne expedition attained a point only 150 vertical feet below the top; and in 1910 the Sourdough party climbed the North Peak, which in reality is a more difficult ascent than the summit, despite the fact that it is some 800 ft. lower. The North Peak was climbed also by the 1932 expedition.

After the failures of the early Browne, Wickersham and Cook expeditions on the spectacular southern and northwestern approaches of McKinley, the discovery of the route via McGonagall Pass,* the Muldrow Glacier and Karstens ridge by the Sourdough party in the winter of 1910 has been followed by a 36-year period during which not a single serious attempt has been made to climb McKinley by any other route.

It is true that McKinley is considered a great prize. It is also a long way off. Under normal conditions the ascent is almost a certainty via the Muldrow route, and nobody has wanted to risk the possibility of failure after travelling several thousand miles and spending many hard-earned dollars on the trip to Alaska.

However, now that there is a good road all the way to Wonder Lake, the approach is vastly easier than it used to be. One can actually drive to a point within 18 miles of McGonagall Pass. During the war 11 different ski landings were made by army aircraft at 6000 ft. on a tributary of the Muldrow Glacier, clearly demonstrating that this means of approach is now both safe and practical with the right airplane. Parts of the Muldrow are an ideal landing field from early November until late April in any normal year. With air travel developed as it is today, it is actually possible to

* For a note on the spelling of the name, see *A. A. J.*, VI, 172.—*Ed.*

leave New York one morning and spend the following night camped at the foot of McKinley!

During the war several different photographic flights were made into the McKinley-Wonder Lake region in connection with field tests of Army Air Force equipment. The photographs taken on these flights, in addition to the many stereoscopic pictures taken by the National Geographic Society-Pan American Airways flights of 1936[1] and my flights of 1937-8 provide a wealth of information for detailed study of the mountain.

In the spring of 1945 during an extended test of AAF arctic emergency equipment in the valley of Brooks Glacier, some 15 miles N. E. of McKinley, our party arranged to have a transit parachuted to us. We occupied several different stations both on the peaks E. of McKinley and near Wonder Lake and have established rather accurate altitudes and positions for all the major peaks in this area. The Army Air Forces took a series of excellent vertical aerial photographs of the terrain between Wonder Lake and the base of the Range in June 1945. Using these pictures and all available ground control data, the Geodetic Survey and the New England Museum of Natural History have collaborated during the last year to improve an otherwise very inadequate map of the northern and eastern approaches to the mountain. We hope that a new and detailed map of the mountain can be published in the not too far distant future, after additional ultra-high-altitude photography over the peak of McKinley has been completed by the Army Air Forces.

McKinley is certain to be climbed again soon. I am writing this brief article to encourage the next party to tackle it by a new route. By far the greater part of the terrain described in this article has never been covered on foot. Hence the reader must make a reasonable allowance for the inevitable errors that are encountered in planning a route entirely by the interpretation of aerial photographs.

The height of McKinley from base to summit is so great that it is probably impossible to climb it safely without establishing at least three advanced camps actually on the mountain. No party which has climbed it to date has succeeded with less than four. The storms on the upper part of the peak are so long, so sudden and so severe at all times of the year that bivouacs are hazardous. The

[1] See *National Geographic Magazine* for July 1938.

warmest minimum night-time temperature encountered during the week that the 1942 party spent at 17,800 ft. in July was 17° below zero F.! The primary problems on McKinley are therefore the length of the climb and the climate. The difficulty of establishing livable camps on the upper part of the mountain and provisioning them satisfactorily will always prove one of the basic factors in choosing a new route.

The southern and southwestern approaches, by way of the Ruth, Tokichitna and Kahiltna Glaciers, are long and arduous. The upper cliffs of the mountain on these sides are so spectacular and unbroken that new routes here will always be classed as extremely difficult and exposed. The ascent of the southerly ridge which stretches from McKinley toward Mount Hunter will some day be accomplished by an exceedingly strong and experienced party, but the most feasible new approach at present does not seem to be from this quarter.

At least two excellent new routes exist on the W. and N. W. side—both of them steep, arduous and long, but entirely practical. One of these routes is very close to that planned by Judge Wickersham during the first recorded attempt on McKinley in 1903. It is in reality a route up the great N. W. face of the North Peak rather than to the actual summit. The South Peak cannot be approached from this side without traversing within a few hundred yards of the top of the North Peak and *descending* 800 ft. into Denali Pass.

The second route is an intricate one, attacking the prominent W. buttress of the South Peak, which drops 10,000 ft. from Denali Pass to the head of Peters Glacier. It would prove very difficult to appreciate the existence of this approach without a careful study of aerial photographs such as those which illustrate this article, as its top and bottom thirds are hidden from the S. and its middle third is obscured from the N.

The first part of the approach from Wonder Lake is identical for all routes on the N. and W. sides of McKinley. After leaving the highway near the S. end of the lake, one follows a good trail through the woods for two miles to the McKinley Bar Ranger Cabin of the Park Service on the N. side of the McKinley Fork of the Kantishna River. The cabin is an ideal place to spend the night, if permission to use it is obtained from the Superintendent

of the Park, *from whom official written permission must be obtained anyway in order to climb McKinley.*

The best crossings of the McKinley River are usually found almost directly opposite the Bar Cabin. Inasmuch as it is fed mainly by melt-water from Muldrow Glacier, it is easiest to cross in the early morning. During the spring and summer months this river can become so swollen in warm weather that it is almost impossible to ford afoot in the afternoon and evening. Until the middle of April it can usually be crossed safely on skis or by dog team except for the normal dangers of successive layers of partly frozen overflow ice. The "breakup" usually occurs in late April; the "freezeup," in early November.

The McKinley River consists of a number of swift, braided streams meandering aimlessly across a flat gravel valley almost a mile wide. Once on the S. side of the last stream the route now diverges from the usual approach to McKinley, which leads straight ahead southward over the slowly-rising upland toward Cache Creek, and McGonagall Pass.

Turn sharply to the right and follow the gravel bars on the S. bank of the McKinley River for five miles downstream to the mouth of the Clearwater. Follow S. W. up the Clearwater, crossing it at the earliest possible opportunity. Although a relatively small stream, the Clearwater can prove a nasty customer after a heavy rain or late on a spring afternoon. It should be forded as early in the morning as possible during the spring and early summer.

About three-quarters of a mile from the McKinley Fork, the Clearwater begins to swing toward the left (S. S. E.) before entering its canyon. Turn right (W. or S. W.) here, first through sparse and then quite thick spruce forest to the E. bank of the Muddy River, which at this point is only about three-quarters of a mile from the Clearwater.

The Muddy River is a wild glacial torrent which drains the entire N. W. face of McKinley, welling up from the snout of Hanna Glacier. Its curious black color comes from the glacial grindings of the dark slate and schist through which Hanna Glacier has cut its deep valley at the foot of McKinley. It is very difficult to cross at any time of year without horses.

There are good camp sites all along the E. bank of the Muddy. It would probably be well to spend the first night fairly near the

B. Washburn

FIGURE 1: SOUTH FACE OF MT. McKINLEY

A closeup aerial view from an altitude of approximately 12,000 feet. The Parker-Browne expedition of 1910 succeeded in reaching the very base of these cliffs at the head of Ruth Glacier at left center.

B. Washburn

FIGURE 2: SOUTH FACE OF MT. McKINLEY

The eastern half of the south face of McKinley and its approaches were explored by the Parker-Browne Expedition of 1910. Upper portion of route is hidden and indicated by dotted line. Ridge in upper right center in front of Mts. Carpé and Koven is the divide between the Ruth and Traleika Glaciers (south fork of the Muldrow). The lowest pass between the Ruth and Muldrow watersheds is almost exactly 10,000 ft. high. It has never been traversed.

AAF by B. Washburn

FIGURE 3: McKINLEY FROM THE NORTHEAST

The usual route up Mt. McKinley (left), showing upper Cache Creek in foreground and camps occupied by the Army Expedition of 1942. Proposed route up Wickersham Ridge of North Peak is shown at right—also Gunsight Pass connection between these two routes for a possible traverse of the mountain.

AAF by R. J. Sipe

FIGURE 4: NORTH FACE OF McKINLEY: ONE OF THE WORLD'S GREATEST PRECIPICES

Showing Muldrow route (mostly hidden) and proposed route of attack by Wickersham Ridge.

point where the river is first reached; for, although this is only about eight miles from the Bar Cabin, it is still a long day afoot owing to the inevitable delays in crossing both the McKinley River and the Clearwater.

Along the gravel flats on the E. side of the Muddy, there is scattered timber for three or four hours' walking. This ends rather abruptly seven miles above the first camp site at a point where the river bars narrow down and the stream twists sharply through an old recessional moraine of Hanna Glacier.

The best route now seems to continue up the center of the barren, flat floor of the valley. Take care to keep the main streams of the Muddy on the right. A second recessional moraine is passed three-quarters of a mile above the last timber. After this, bear gently to the left as the large hummocks and hills of moraine-covered ice at the stagnant end of Hanna Glacier come closer. About three miles above the timber, the foothills of the Range begin to rise on both sides of the valley, and a somewhat barren and miserable overnight camp will be in order—unless a little flat grassy spot can be found in the shelter of one of the great heaps of moraine. The altitude here should be somewhat over 3000 ft. The view of the North Peak, rising at the head of the valley, is certain to be magnificent.

The third leg of the route from the Bar Cabin to the base of the North Peak is relatively short, but the total distance of 21 miles seems too long to tackle in two days, unless the party is in fine shape and no relaying need be done.

A rushing stream follows the hollow between the side of Hanna Glacier and the lower slopes of the hills which rise steeply to the E. For two miles above the end of the glacier the going appears best right beside this creek. After one comes abreast of the first sharp peak[2] on the left (E.) side of the valley, there is a chance that the footing may be a bit less rough between the hillside and the high abandoned E. lateral moraine.

Four miles above the end of the glacier (seven miles from timber), the valley takes an abrupt turn to the right (S. W.) at the very foot of the North Peak. At this same point, a gentle valley rises to the left (S. E.) to Gunsight Pass, the low divide between the Muldrow and Hanna Glaciers which is now an easy three-mile

[2] Left foreground of Fig. 4.

walk.[3] Here an excellent Base Camp can be established at an altitude around 5000 ft. on flat ground, behind the E. lateral moraine and in full view of the stupendous 14,000-ft. cliffs of Wickersham Wall, the N. face of McKinley.

If an airplane approach to this climb is preferred, it is easy to land on Muldrow Glacier about five miles from this point. This camp would prove an ideal base for a traverse of McKinley in either direction. It is certain to be a very windy spot, with rough air for dropping supplies, except in very calm weather.

The approach from this point to upper Hanna Glacier is best followed on Figures 4 and 5. There appears to be no ideal way to traverse the horrible mess of moraine-covered ice directly W. of Base Camp. It is at least certain that the going is better about two-thirds of the way across the glacier toward the opposite side from camp (W.). After about three miles of gentle climbing toward the S. W., crevasses begin to form at the right, and the ice appears much better just toward the middle and then toward the left where the medial moraine from the Jeffery Glacier lies.[4]

The suggested location of Camp 1 lies approximately six miles S. W. of Base Camp and at an altitude of about 6300 ft., directly opposite the confluence of the Jeffery and Hanna Glaciers. This is the last common camp for the two projected new routes up McKinley. There is just a possibility that a small airplane could be landed near here in April.

Route I

The North Peak via Wickersham Ridge

Leaving the level surface of Hanna Glacier, follow the most practical route up Jeffery Glacier, bearing in mind that the further to the left one goes, the more acute becomes the danger of avalanches from the beetling ice cliffs of Wickersham Wall. *Keep as far to the right as is humanly possible between Camps I and II on this route.* It is impossible to exaggerate the danger of avalanches on the N. side of a great Alaskan peak.

Camp II, situated on the smooth névé of upper Jeffery Glacier, should be at a height of about 10,000 ft., just below the little ridge which marked the end of Judge Wickersham's climb on 20 June

[3] See center of Fig. 3.
[4] Left foreground of Fig. 5.

1903.[5] Above this camp the climb of McKinley begins in earnest (see Figures 5 and 6).

A huge ice wall situated at about 14,000 ft. sweeps the whole face E. of this camp with avalanches. A small cliff a few hundred yards directly above the location of Camp II in Figure 5 should be watched closely so that the camp may be placed well out of any possible danger.

Although the indicated route above Camp II first swings to the left across upper Jeffery Glacier, this is an exposed spot and should be avoided if the climbing along the crest of the lower part of Wickersham's ridge looks reasonable. In any case, a vertical ice wall about 1000 ft. above this camp forces one briefly to the left. The route then winds back and forth upward for 1500 ft. on steep snow slopes amid large blocks of ice. To minimize danger, the crest of Wickersham Ridge should be followed as closely as conditions permit. This appears almost impossible, however, for more than a few hundred yards below Camp III.

The climbing between Camps II and III is the only part of this route involving danger over which the climber has little or no control. In order to accelerate climbing through this part of the route, a dump is suggested about 1500 ft. above Camp II and 1200 ft. below Camp III on a safe shoulder of the ridge. A good trail can be easily broken out to this point and two or three relays carried up and left here. The last trip up from Camp II can be made relatively light and fast, only stopping briefly at the dump for lunch and carrying on to III where camp can be made. Two or three easy trips can then be made down over a well broken trail to move the camp up to III. This type of procedure not only keeps the party rested and moving fast in danger spots, but also is very efficient for keeping the trail broken out in poor weather. The going in this part of the route is certain to be miserable in fresh snow, which usually piles deep in the lee of all ice blocks on these northern slopes.

Camp III is situated at a little less than 13,000 ft. For 800 feet above this camp the route appears relatively simple—first up gentle, then steep névé slopes. At an altitude of about 14,000 ft. an extremely steep ice ridge about 400 vertical feet in height must be negotiated to attain the easier slopes below Camp IV, which is

[5] See references at end of this article.

located in as unexposed as possible a spot on the crest of the ridge at approximately 15,000 ft.

Camp V at about 17,000 ft. is situated at the crest of the main N. W. buttress of the North Peak. It is approached from below by steep snow and ice slopes which will probably require considerable step cutting around 16,000 ft., but under the best of conditions can probably be negotiated on crampons. After a heavy S. W. snowstorm, parts of this section of the route will have to be watched carefully for windslab. Around 16,000 ft., where rocks force one off to the left of the ridge, there may be snow avalanche danger from far above.

Under ideal conditions Camp IV might be eliminated and the 4000-ft. climb from III to V handled in a single day. Two or more fixed ropes would prove very useful at the 14,000-ft. Steep Pitch, as this particular altitude on McKinley seems to be swept by a great many storms and this spot might be rather nasty to descend in a gale and bad visibility.

Camp V is located above 75% of the central Alaskan bad weather, whose upper ceiling averages around 16,500 ft. A short but steep ice slope rises directly above this camp, whence a gentle ridge leads to the 19,000-ft. plateau (as large and flat as a polo field!) and the summit of the North Peak (19,440 ft). Just before the plateau is reached, a steep little hump of rock and snow rises on the ridge. This can be traversed easily to the right (S.) to attain the plateau, but could be climbed for a splendid close-up view of the final cone of the North Peak a third of a mile away.

The Muldrow route can be reached from the top of the North Peak by descending to the plateau, crossing it southwestward and climbing gently to the rock buttress[6] overlooking Denali Pass. The pass (18,150 ft.) is about 800 ft. of clambering below this little peak down a ridge of jagged schist.

Route II

McKinley via the Great West Buttress

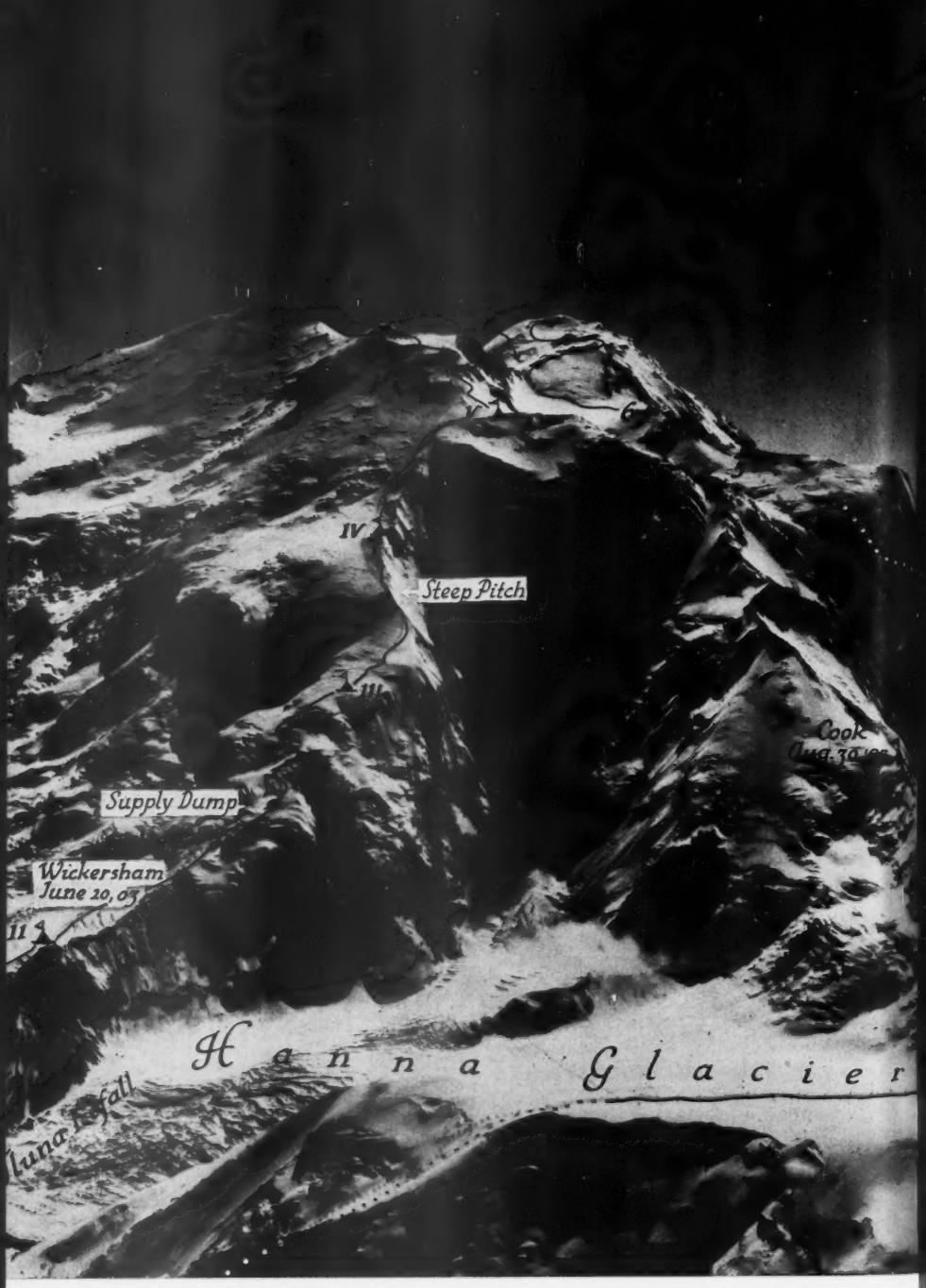
This route is longer than Route I, but somewhat less exposed and difficult as a whole. Because of its westerly and southwesterly exposure, it should prove much warmer, especially in the early spring.

[6] See Fig. 7.

AAF by B. Washburn

FIGURE 5: NORTHWEST APPROACHES TO McKINLEY

Upper Hanna Glacier, showing points reached by Wickersham and Cook in the summer of 1903 and proposed new routes.



AAF by B. Washburn

FIGURE 6: WICKERSHAM RIDGE

The entrance to the upper basin of Hanna Glacier and the formidable westerly cliffs of the North Peak. The perspective of the approaches to Denali Pass from the west is particularly accurate in this view.

B. Washburn

FIGURE 7: THE WEST BUTTRESS OF McKINLEY

The upper basin of Hanna Glacier is in the left foreground, with Camp 2 at an elevation around 8500 feet. The "pink cliffs" referred to by Dunn and Cook are the rock outcrops immediately above Cook's highest camp.

B. Washburn

FIGURE 8: THE GREAT KAHILTNA FACE

The actual summit of the North Peak is not visible in this picture. The Kahiltna basin has never been explored on foot. This is one of the few pictures ever taken of this savage and isolated face of McKinley. Unclimbed Mt. Hunter (14,980) (just off to right) can be most easily approached from the upper Kahiltna.

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From Camp 1 (about 6300 ft.) the Tluna Icefall can probably be avoided more easily to the right than by the route followed by Dr. Cook in 1903.[7] There is more distance involved between Camps 2 and 3 than is apparent in Figure 5—especially between the icefall and Camp 3. Hence a midway dump to facilitate packing is suggested near the icefall. It is probably about five miles between these two camps. No topographic work has yet been done W. of the Base Camp and all these distances and altitudes have therefore been estimated by reference to Wickersham, Cook, Dunn and aerial photographs.

The upper basin of Hanna Glacier must be about 8500 ft. high. There is almost no question that an airplane can land easily and safely a little W. of the location of Camp 2 on these illustrations.

Airplane landings in this country are, however, to be heavily discouraged unless at least one member of the party is intimately familiar with the entire approach on foot. (See story of 1932 Carpe-Beckwith McKinley Expedition in *A. A. J.* for 1933.)

Whether or not a landing is made at Camp 2, it is an excellent place for a large advance base of parachuted or free-fall airborne supplies which would otherwise entail a very heavy back-packing program below this spot.[8]

Camp 3 (about 11,000 ft.) is located on the crest of a snow pass between Hanna and Kahiltna Glaciers, with magnificent views in every direction but to the W. It may be necessary to climb over the top of the snow dome to the W. of Camp 3 in order to reach this pass, if its E. face (not clearly visible in any of these pictures) cannot be easily traversed.

Above Camp 3 an illusion occurs in Figure 7 which makes it appear as if a gentle snow valley leads all the way to Camp 4 (about 13,500 ft.). This is the case above the suggested half-way supply dump, but there is quite a drop-off to the S. of Camp 3, and the ridge will probably have to be followed over two rather steep pitches in place of the possibly impractical alternate route in Figure 7.

The route between Camp 4 and Camp 5 is the key to the ascent of this side of McKinley.[9] It is invisible from the ground except from the summits of Mounts Foraker and Hunter. It may best

[7] See references at end of this article.
[8] See Fig. 7.
[9] See Fig. 8.

be studied from an airplane flying over the head of Kahiltna Glacier. Camp 5 is probably a little less than 16,000 ft. high, and the 2000 ft. below it are the most difficult and exposed part of this route.

The safest ascent above Camp 4 would certainly be via the crest of the rock buttress directly above camp, but two extremely steep rock pitches in the lower third of this crag may render it impractical. The big rock and snow slope S. of Camp 5 can most certainly be climbed, but a detailed route is impossible to suggest in a picture taken at such an angle as Figure 8. The rock here is granite, so avalanche danger on that score would appear at a minimum. Snow and ice conditions will have to determine the best final solution of this problem at the actual time of ascent.

Camps 5 and 6 are very near together, but the location of 6 is suggested in order to have a final camp near 17,000 ft. for the climb to the top via the last steep slope of Denali Pass and the gentle westerly ridge to the South Peak of McKinley. Local storms on the upper part of McKinley are so sudden and so utterly unpredictable that it would seem inadvisable to have a final camp much more than 3000 ft. below the top, except on the extremely easy N. E. side.

If a traverse of McKinley were attempted by this route, Camp 6 could easily be advanced into Denali Pass at 18,150 ft. But *never camp actually in Denali Pass,* as the violence of the weather there is indescribable at all times of year. A site a few hundred yards down Harper Glacier and on the S. side of the valley would be much less exposed to the full force of the S. W. winds that suck through the pass with hurricane force.

The preparation of this article has been something of an experiment in alpine journalism, as it may not be entirely wise to try to predict publicly the conditions on two new routes neither of which has ever even been approached by well qualified climbers. Yet I am convinced, from a thorough study of these pictures under the stereoscope, that both these ascents can be made, given a powerful party and good snow conditions.

The first route is almost certain to be the colder and the more difficult, except under ideal snow conditions. Heavy fresh snow could make certain parts of both routes exceedingly dangerous. Route II has the advantage of being a direct attack on the summit

of McKinley. It is also better adapted to air support, as supplies could be easily dropped near Camps 2, 4 and even 6 if the aircraft had a sufficient ceiling.

Both routes are magnificent climbs that represent a real challenge to the mountaineers of America.

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Adak Memories

KENNETH A. HENDERSON

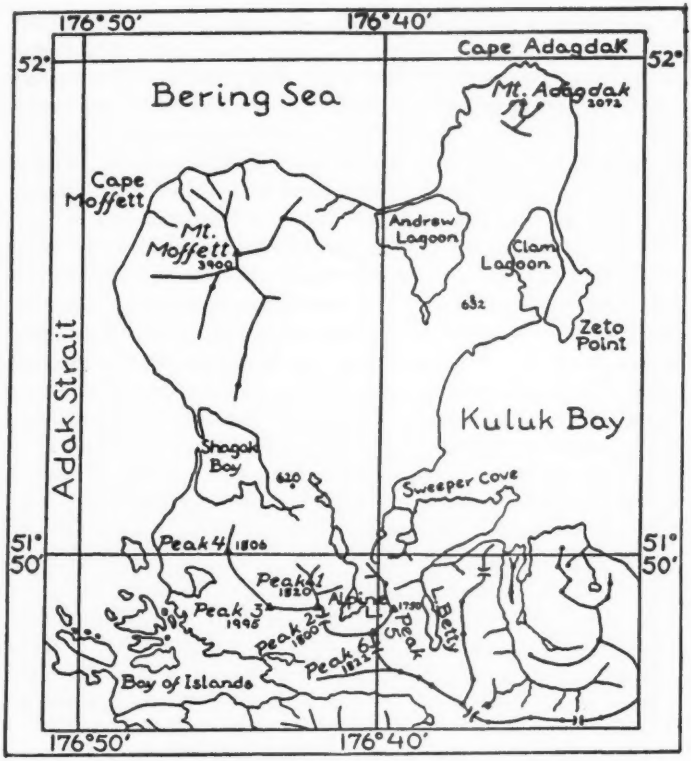
WHEN the rain beats down heavily or the wind threatens to tear off the roof, I often think back longingly to the year and a half that I spent in the Aleutians, and in fancy carry myself back to that weirdly beautiful region where the weather can be so perverse and so strangely fascinating. There the wildest storms would do millions of dollars' damage in a few hours and then be succeeded by quiet, starlit nights, when the moon glistening on the snow would light up the countryside with a calm brilliance that made the war seem very far away.

Much of this time I spent on Adak, a large island well out in the western portion of the chain. Our installations were mainly in the north central section of the island, from which the mountains could be reached with reasonable dispatch—or rather, they could be after a few roads had been built over the tundra to facilitate travel. For many weary months, until the task of removing the enemy from our neighboring islands of Attu and Kiska had been accomplished, all was work and more work. Then followed a period of relaxation when the tired muscles could be stretched and, for a half a day in seven, one could even do as one pleased. Gradually life became more regular, and a whole day a week could be spent away from work. The mountains then seemed closer and less forbidding.[1]

ADAGDAK, APRIL 1943

The winter of 1942-43 had been a dreary succession of ram, snow, wind, ice and work, with short intervals of watching the countless sea birds along the shores and cliffs. Always on good days the near-by Adagdak and the more distant Moffett beckoned, but life was too busy or the weather too bad for climbing. At last on April 1st the day seemed auspicious; and I determined that Adagdak, only four miles away, should be my goal. It was already daylight when I reached Clam Lagoon at 8 A.M., surprising a flock of emperor geese who flew off protesting noisily. It was a long walk across the spit connecting Zeto Point with the mainland, and the going was rough and slow. At several points on the lagoon

[1] Although the Aleutians are famous for their volcanoes, there are no active volcanoes on Adak. Several of the peaks are of definitely volcanic origin, but the main highland mass appears to be of igneous origin.



NORTHERN AND CENTRAL PART OF ADAK ISLAND
With schematic diagram of mountain ridges
(Mercator Projection)

side of the spit, there were small regular mounds laid out in streets, like the pre-Aleut villages found farther north on the Seward Peninsula. A few ruined barabaras testified to Aleut occupation, but this exposed spit between the Bering Sea and the lagoon did not offer sufficient security against attack to justify the larger settlements noticed elsewhere.

An old "cat" track leading up the slope was a welcome find, when at last the spit had been traversed. The hummocks and tall grasses of Aleutian tundra make travel difficult. Here the tractor had so beaten down the hummocks and the grasses that walking was relatively easy. The track had another great advantage: it carefully avoided the deep gullies which the stream had cut into the soft soil and rock of the mountain. Suddenly, on a small level

spot, a slight motion near my feet drew my attention to a rock ptarmigan. Four small brown spots on its back showed that it was beginning to put on its summer coat. The protective coloring was perfect in this landscape, speckled as it was with many patches of snow.

The way led over a series of three humps, each flat on top and merging into the main mass of the next higher one. Finally, at 11.20, I stood at the top of the ridge. The altitude was 1450 ft. The "cat" track turned to the right and led down the ridge to an old outpost that had been abandoned as too difficult of access and too often blanketed by fog. A basin opened before me, and beyond lay a series of ridges leading up into the clouds which had begun to form. Striking across the basin, which was covered with hard frozen snow, I ascended the slope on the far side to a col which appeared through the mist. A few rocks broke through the icy surface and facilitated the climb. The air seemed alive with incessantly twittering snow buntings. A series of ridges ran off in three directions from the col; directly beneath, a deep valley opened out, leading abruptly down to the sea, nearly 1800 ft. below. Mist veiled the heights, so that it was not immediately apparent where the summit lay. I chose the ridge to the right and in a few minutes, at 12.10, reached the top. The aneroid read 1880 ft., and the ground sloped away in all directions. After a few minutes the mist cleared away long enough to show that only lower ridges lay ahead of me. But to my left there was definitely a higher summit.

Retracing my steps to the col, I continued on the ridge toward the higher summit until a second snow-filled basin opened out ahead. I climbed up to this and crossed it to the farther ridge, which I reached at 1.15. Luckily the mists were not so thick now, and I could recognize the cornice on which I stood. A glance over the edge showed the slope dropping away precipitously to the Bering Sea, not half a mile away and 2000 ft. below. Directly below the cornice, the wall was nearly vertical and heavily covered with rime from the cold, moisture-laden winds of the north. Through breaks in the drifting mists could be seen the ermine-clad mass of Mount Moffett, very beautiful and impressive in its winter coat. Still I was not on the top. The aneroid read only 1970 ft., and farther up the snow basin which I had crossed loomed a higher peak. Quickly I crossed the basin, hacked a few nicks in a smooth ice slope with a jackknife, and in 20 minutes arrived on the summit. The aneroid agreed very closely with the

observed height of 2072 ft., the highest point of Adagdak. I stayed here for some time, sampling the rock (strangely enough, a soft tuff) and enjoying the views which began to open up more frequently. Twenty-five miles away across the Bering Sea, Great Sitkin gleamed like a great white jewel on a sapphire sea. To the south, the snowy peaks of Umak, Little Tanaga and Kagalaska seemed to form a continuation of the great snowy massifs of Adak, with the dark blue sea sparkling at their feet.

The trip back was fast. The old "cat" track on the ridge was reached at 2.40; but this time, instead of returning as I had come, I followed the track down the ridge to the abandoned observation post, which I reached in only 20 minutes. From here, 1100 ft. in altitude, down to a bluff above the sea, it was hard going through the tundra: the grass was thick, and the hummocks close together. But in some two hours I was back at the lagoon. A 40-minute walk carried me across the spit back to camp, food and a night of work.

Mount Moffett, Peak 1, Peak 2: Summer

It was not until several months later, after I had moved to a more central location on the island, that I found another opportunity to get up into the hills. It was the middle of July, and we were all suffering from a heat wave. The sun had shone all day for two days in succession, and at midday the thermometer rose to close to 70°F. Shortly after lunch Dr. Frederick O. Rankin and I drove up to the height of land toward Shagak Bay, about 1100 ft., and started up the ridge toward Mount Moffett. On the lower slopes, which are composed largely of thin tundra interspersed with rocks, we met several dozen people, all headed toward the wreck of a plane that had crashed a few days before. This was only about a mile from the road, in a spot to which a jeep could be driven, albeit with some difficulty. Shortly above this spot the ridge rose in an abrupt step. Having chosen the left-hand edge of the step and ascended it part way, we crossed on to the farther slope and traversed obliquely across the face of the ridge to a low spot considerably farther along. A few patches of snow still remained, facilitating passage over the boulder-strewn slope. Once the ridge was gained, the going was easy along the narrow crest. The rock was rotten; it demanded care in the narrower places. The sun was warm, and we met several other parties on the ridge. A steep bit of rotten rock led to a large plateau where the west ridge met the south ridge up which we had been progressing. Our

altitude was now about 3700 ft., and the summit loomed only a few hundred feet above us.

An easy slope led to the summit rock, and a short scramble up a rotten chimney and around a corner placed us on the top—3900 ft., and the highest point on the island. The view was superb. The island of Adak lay spread out to the south, with the many lesser hills of the southern ranges running into each other in a bewildering jumble of peaks and ridges. To the north lay the Bering Sea, very blue and sparkling in the sunlight. To the east, far below us, was the mass of Adagdak; and beyond it lay the great blue expanse of Kagalaska Bay, with the volcanic cone of Great Sitkin on the other side, sending up wisps of smoke to show that it was still alive. To the west, across Adak Strait, towered the beautifully symmetrical cone of Kanaga, sending up a thin but steady stream of smoke; and beyond could be plainly seen the even higher and more impressive twin cones of Tanaga. Over the horizon lay Kiska, and all about us were signs of the effort to wrest that bleak outpost from the enemy. The return was a race with time, to reach the mess hall before closing. Success crowned our efforts: we celebrated the ascent of the island's highest point, our goal for the past six months, with a hearty dinner, complete with sauterne.

The next afternoon I was glad to receive a telephone call from Dr. Rankin proposing that we leave the office early and climb several peaks in the southern ranges before dark. The sun was still shining; this seemed too good an opportunity to miss. I quickly made arrangements to leave at 5 o'clock (an hour early) and drove around to the hospital to pick up the doctor. We drove over a doubtful track toward the rifle range, as far as we could, and then, leaving the jeep, started out on foot. Fortunately, since the ranges were not in use, we could take a direct route around the lake and straight to the mountain. Our peak, which we designated Peak 1, rose some 1500 ft. above us. The meadows around the lake were aflame with color. The narcissus, anemone, aster, lupine, fire weed and even wild iris were all in bloom. The grass on the lower slopes of the peak was lush, and the slopes were steep —a combination which made progress very slow. Gradually we rose above the thick grass to slopes carpeted with a low-growing heath. On the crest of the ridge, this growth was interspersed with rocky patches. We were on the N. E. ridge, which became quite abrupt in its upper section, so we chose to traverse across the steep slope separating us from the N. W. ridge.

The going was so hard on the ankles that we were glad to arrive on the crest of the ridge. Here the great panorama to the west opened out before us—the wide expanse of Adak Strait and the length of Tanaga Island, with its great volcano emitting a fine column of steam and dominating the northern end. It was only a short distance up the narrow ridge to the meeting of the two ridges, an airy perch whence another narrow ridge led gradually up to the highest point. This was an exposed traverse: on the left, the east, the cliffs dropped sheerly for many hundreds of feet, while on the right the heath-covered slope, about 60° in its upper part, led down about 1500 ft. to the valley bottom. The distance to the summit, 1820 ft. in altitude, was only a few hundred feet. Here, quite fortunately, the ridge was somewhat wider. The highest point itself was a lichen- and heath-covered mass of rock standing about four feet above the ridge, leaning out over the sheer drop on the east and just big enough to stand upon. Once we had satisfied the technical requirements of treading the actual summit, we retired to the broader ridge and enjoyed the magnificent panorama. We were particularly interested in the view to the west. The cloud bank from the North Pacific, which covered the ocean to the south, was beginning to come up the passes between the islands. It was low, only 100 ft. or so off the water. Curiously enough, no matter how thick as it rolled northward, it did not cover the land, but divided when it reached the islands. In fact, the outline of the southern end of Kanaga could be plainly discerned, etched in fog like an intaglio.

The breeze was cool and our way was long, so we soon began our journey northward along the ridge toward the conical peak at the farther end. This we called Peak 2. The ridge continued narrow for quite a way, and several abrupt pitches had to be climbed down with care, but we soon arrived at the broad saddle which had separated us from our conical peak. Despite the lateness of the hour, we decided to climb on up. It was not too long a climb, and it promised a fine view into the Bay of Islands, which had previously been hidden from us. With a wide choice of routes, we could select the easiest. From the summit we looked down into the Bay of Islands and across it to the mass of peaks to the south. The fog was beginning to come into the bay from Adak Strait. In the interval since we had last noticed it, it had pushed northward through the strait into the Bering Sea. It still had not encroached upon the land, but no water was to be seen—only a low-lying mass of fog.

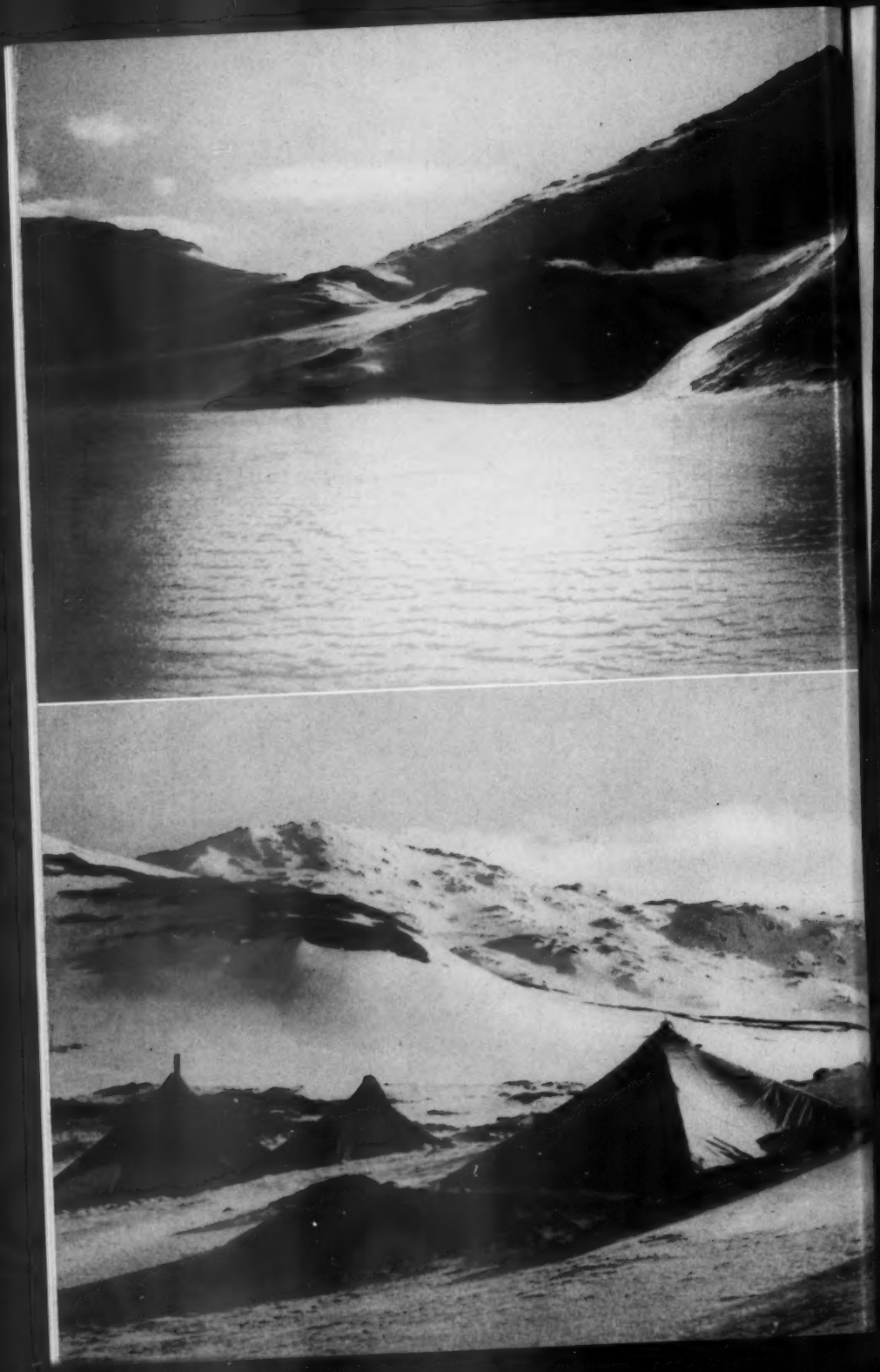
We could not linger long upon the peak. We started down toward the east, keeping high above the large lake (sometimes called Alpine Lake) which lay below us, and swung over a rocky ridge and under the forbidding precipices of our peak back to the car. The first long fingers of fog were just beginning to encroach upon the land when we reached the jeep. To the west the steaming cone of Kanaga stood out silhouetted in the sunset, high above the intervening fog. It was only a short trip back to the hospital—some seven or eight minutes. When we arrived there, the fog had already crossed the island, a distance of perhaps three miles, overcoming a ridge of more than 1000 ft. Such is the speed of the summer fogs of the Aleutians.

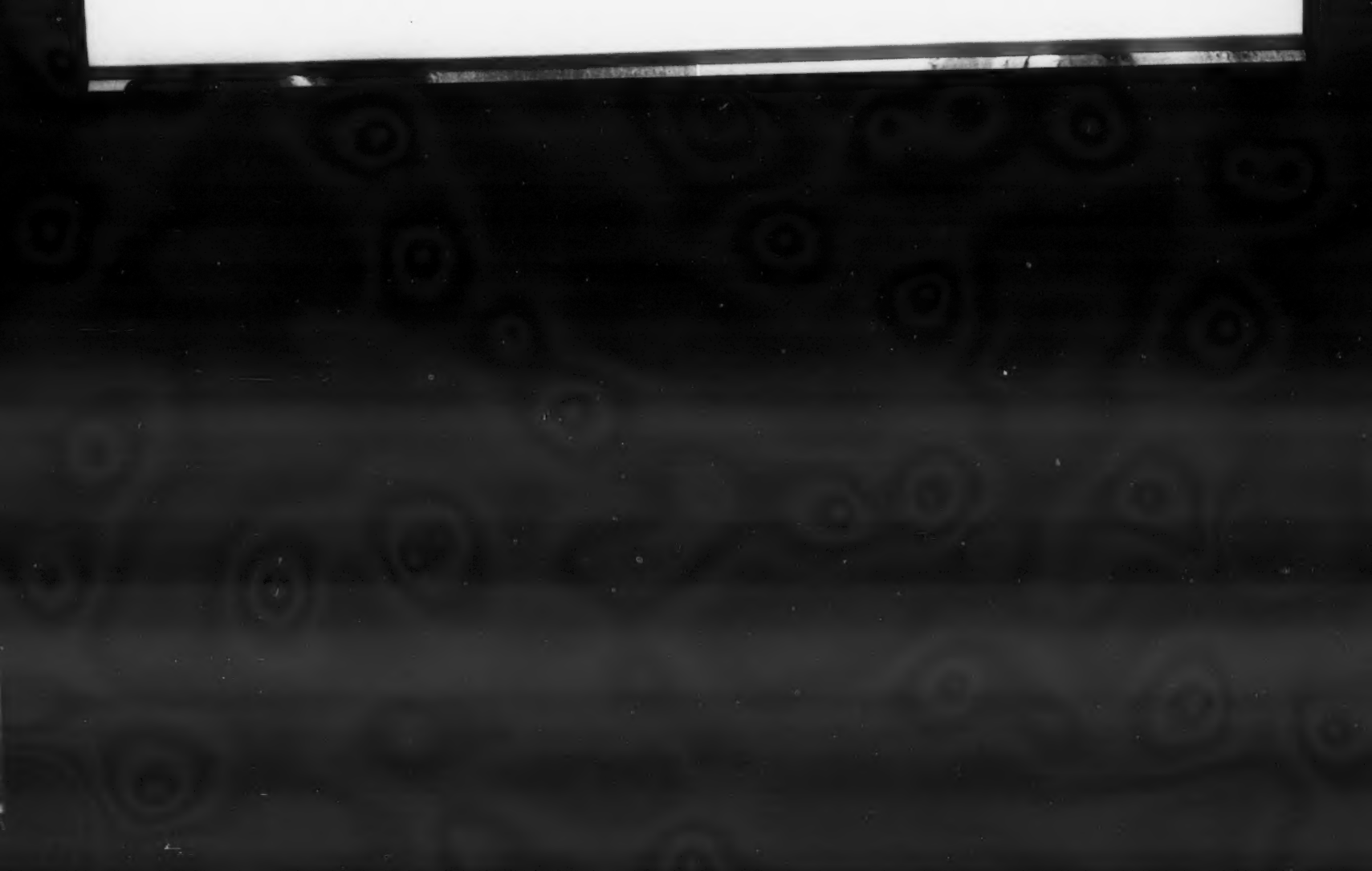
Peaks 5 and 6, January 1944

Summer turned to autumn and merged into winter, the snowiest winter in many years. My companion, Dr. Rankin, had left; and there appeared no one else to take his place. In January 1944 work slackened, and one fine day the opportunity for a trip presented itself. I left just before lunch, drove over to Finger Bay and started up the trail to Lake Betty. This trail had been broken out and offered fairly good going to the lake, which was solidly frozen over. My original intention was to go only as far as seemed safe under these conditions, so I gingerly tested the snow surface. In most places it was hard enough to support my weight. By picking my way over the obviously wind-packed areas, I could always find a hard supporting crust. In some places the softer snow would let me sink in a few inches, but nowhere did there seem to be any danger of deep penetration—which was fortunate, because many of the gullies were filled to enormous depths by the heavy snow that had fallen. Carefully picking my route, I worked up the mountain to the right, Peak 5 (1750 ft.), on the west side of the lake, my spirits rising with the altitude. The wind-blown snow formed curious swirls and, in places, waves like the sand on the beach. The surface was frozen hard in many places, but nailed boots held fairly well except on real ice. A few steep pitches where hand- and footholds had to be punched and kicked were more difficult, because the snow beneath the hard surface was soft and offered poor footing. I stopped often for pictures

PEAK 1 AND MOUNT MOFFETT FROM PEAK 2
Photo, K. A. Henderson

PEAKS 1 AND 2 FROM TRACK TO ALPINE LAKE
Photo, K. A. Henderson





(it was a beautiful day), but as my watch had stopped I could not tell the time. It was probably about 2.30 P.M. when I reached the summit. This seemed early, and I determined to continue on to the next summit, Peak 6 (1822 ft.), as I had done one day during the summer. The going was icy in spots across the ridge and required considerable care, but I soon arrived at the higher summit. A stick standing in a small cairn was covered with frost feathers nearly a foot long, and rime covered the whole summit area. The view was most extensive. As the ridge around the southern edge of the lake did not seem so distant, I decided to continue on around the lake.

I started down the peak and suddenly, without warning, found myself in a driving sleet storm. I sat down for a while to let it blow over, but finally concluded that I must make some progress to complete the trip. Visibility was reduced to about 50 yds. or less, and route-finding was largely luck; but the wind would blow the drifting scud aside for a moment and give me a chance to get a bearing on some more distant object. After seemingly interminable scrambling up and down, I found myself at last on the ridge which was my objective. Although there was no reason to climb to its crest for the view to the south, which I had been looking forward to, but which was now non-existent, it was necessary to climb nearly to the top to reach better going. I progressed along the ridge in a general easterly direction to gain the farther side of the lake. Suddenly, during a rest, I looked up and saw a blue patch of sky and crimson clouds high above. It was sunset—and I was at the opposite end of the lake, some three miles of trackless snow from a trail. It was imperative to travel as fast as possible. I decided to head down to the lake and cut across a large bay which cut deeply into the ridge. This brought me into the lee of a series of small cliffs where the snow was deep and unconsolidated. In several places it became necessary to slide down in a prone position in order not to sink in.

Finally, just as dusk came on, I reached the lake. Here the going was much easier. Although the ice was covered with snow, it was flat. Keeping a straight course in the gathering dusk was possible only if one picked out a dark object and headed for it.

PASS TO BAY OF ISLANDS AND PEAK 2 FROM ALPINE LAKE
Icy crust on the snow is very common
Photo, K. A. Henderson

ARMY CAMP AT ALPINE LAKE
Peak 6 is in the background
Photo, K. A. Henderson

Luckily there was a partially covered rock on the farther shore, and this I headed for. About half way across, I had the feeling that the ice was not so secure as it should be. Glancing back at my track, I noticed to my horror that water was welling up in my footsteps. Since retreat was impossible, I hastened my pace for the farther shore, walking as lightly as I could, and taking care to move steadily, without stopping. Just as I stepped onto the snow-covered shore, the ice gave way beneath my foot; but the water was shallow, being so close to the shore, and I did not even get my foot wet.

By now it was dark, and it was obvious that a direct line across the lake to the outlet was most inadvisable. To climb high on the ridge for easy going promised to be both time-consuming and fatiguing—factors to be reckoned with, for I had had nothing but a chocolate bar since breakfast. I therefore chose to follow the shore line as closely as possible. After several near misses on breaking through the ice. I was convinced that a somewhat higher route would be better. It was very dark now, and in starlight the slopes were impossible to distinguish. A prominent knob, or sometimes a snow covered rock face, would serve as a landmark; and by heading for these I managed to make my way along the lake for nearly two miles. At the end the choice lay between taking to the ice and climbing over a high cliff that barred the way. Remembering my previous experiences with the ice, I chose the cliff and finally reached the top. From here it was down hill, but unfortunately in deep snow, to the outlet of the lake, where I once more found myself on a trail, only a mile from the road. It was after 10 o'clock when I got back. After this trip of eight or ten miles through trackless snow, I slept soundly, so soundly indeed that I missed breakfast the next morning. The net result, however, was most beneficial to a figure which had been suffering from too long a spell of desk work.

Mount Moffett and Peak 2: Winter

A few days later, Peaks 1 and 2 attracted me. I had been there six months before with Dr. Rankin, but now the peaks looked far higher and more forbidding. Furthermore, I wished to reach the pass at the southern end of the range which would lead to the Bay of Islands. One fine afternoon I walked over to Lake Christopher, which was by now frozen solid, and found a "cat" track leading toward the upper lake, Alpine Lake. Follow-

ing this, I quickly covered the mile and a half to the upper lake. The former outpost which guarded this spot seemed to have been reduced in size, but across the lake on the slope leading to the pass could be seen a group of men at work. Following the track across the solidly frozen lake, I soon caught up with the work crew, just finishing their work for the day on a telephone-pole line. This was no mean undertaking at this season, for some of the poles had to be sunk through seven or eight feet of snow into the hard ground beneath. I went on to the pass, where the violent winds from the west funnelling through the passage had produced excellent examples of sastrugi. The view was wild and wintry in the extreme, with no sign of life or habitation.

The peak towered another 500 ft. above me, but did not appear too difficult of access; in fact, despite the icy slopes, it took only half an hour to reach the top. The view along the ridge toward Peak 1 was definitely alpine. Since several storms could be seen in the west, headed in my direction, I did not linger but returned to the pass. Here, consumed by curiosity to see what was on the other side of the mountain, I started up the low summit to the south, as I hoped from the top to get a better view of the ridge which hemmed in the valley to the south. It was very icy, but by a judicious choice of route I managed to avoid the worst difficulties. The storm which had been approaching for the last 20 minutes was by now very close. I ran the last few feet to catch a view before it should be obliterated. In a matter of seconds I was standing in a raging blizzard. The return in high wind and low visibility was more difficult than the ascent, but I soon reached the trail of the line crew and found easier going. As quickly as it had come, the storm was gone. A beautiful sunset filled the pass, while a nearly full moon stood in the eastern sky. It was well after dark before I arrived home, but not too late for a good dinner. This climb, with many variations, I repeated often; but it was not until April that I succeeded in traversing the entire ridge and repeating the climb of the previous summer.

Ever since my climb of Mount Moffett in the summer, I had been planning a winter ascent. After my recent experiences, the idea seemed quite feasible. And so, one reasonably fine-appearing noontime, I obtained a ride, right after lunch, to the highest point on the ridge accessible by road. Despite the fact that here on the ridge the winds blew with great force, an entire encampment of Quonset huts had been completely covered with snow. In some spots even the chimneys had to be dug out. Climbing onto the

snow and crossing over the buried huts, I struck out for the mountain. The sun, which had promised so much earlier, now hid behind a cloud. The snow here was not so well consolidated as on my previous ascents, and I sank in to my ankle or above at nearly every step. This, in addition to the uphill going, made progress slow. It was well over an hour before I arrived at the wrecked plane, now completely submerged save for a rime-covered rudder. A glimpse of sunlight on the frost-covered ridge high above cheered me on. An hour later, when I reached the ridge itself, not only was there no sign of sunlight but the ridge was wrapped in fog. I chose the crest of the ridge as the easiest route to follow under these conditions and continued along it with care, occasionally breaking off sizable rime formations in order to obtain secure footing. Finally, after what seemed hours, I ascended a steep step and stood on what appeared to be a large flat surface. This I remembered from my summer climb as the junction of the west ridge.

A slope led up to the right, to the summit. The slope was easily negotiated; but the rocks, which in the summer had given a nice scramble, were now baffling. The vertical parts were covered with a thick coat of rime that offered no holds or footing. I had no ice-axe to clear them off, and the coating was so thick that an ice-axe would have been of doubtful value, anyhow. The chimneys and gullies were filled with deep powder snow. I knew the summit could not be far off, yet the problem seemed insoluble. The wind was numbing and blew ice and snow particles into my eyes, nearly blinding me. Then, in a last desperate attempt, I fought my way up a short snow-filled gully, immersed in snow to my waist. My feet still found nothing solid. It was like treading water. My arms all the while were flailing the snow above. I half swam, half floated up that chimney until I could catch a most uncertain hold on some frost feathers and then slowly drew myself onto more secure footing. It was still most precarious, but the worst was over. In a few minutes I stood on a point from which the frost-covered rocks appeared to drop away in all directions. My aneroid, which I had set just before starting, confirmed my belief that I had reached the summit. The wind was rising to a crescendo of fury and drove the flying spicules of ice and frost so hard into my face that I could not keep my eyes open. It was imperative to retreat as rapidly as possible.

I hurried down, jumping down the chimney that had caused me so much anguish, and tried to follow my obscure track on the slope below. I was successful as far as the plateau; but on a hard section, where the nail marks barely showed, I lost the track. The williwaw was now blowing in full fury. Even the small bit of my face exposed by the mask stung and smarted from the cold and vigor of the wind. I was lost near the summit of the highest peak on the island, and I had no compass—a lack I had vainly sought to remedy for many months. I carefully checked my track behind me and, feeling that I had been on approximately the correct course when I lost the track, endeavored to maintain it. Visibility was absolutely zero. The white in front of me and to the side was sometimes snow, sometimes cloud; it was impossible to discern the difference. Each step had to be taken with care; it had to land on something as solid as snow and not as ephemeral as cloud. Never have I spent a half-hour more full of suspense. Despite every effort to keep on the ridge, I soon found myself on a steep slope. Still trying to keep altitude, I went on until a sudden clearing of the mist showed the summit of a ridge far above me on my right. I could return to the ridge and follow down it. But suppose it were the west ridge! Then I should be many miles from civilization, and even several miles from the nearest outpost—and that was a long ridge, to boot. If it were the south ridge, it would be my nearest and surest route home. I decided that the safest course was to go straight down: no matter which cirque I found myself in, it was a matter of only a few miles to a road. Changing my course, I plunged straight down the slope and soon encountered better visibility. In another 600 or 700 ft., I came out of the cloud and the blizzard to find myself in the cirque between the south and west ridges. It was the west ridge that I had seen. My choice of route had been most fortunate.

I was still far from home, and the snow was deep. Going downhill was not so bad, but it was tedious and very tiring when I started to traverse the slope to gain the lower end of the south ridge. From the ridge, however, the route was over harder snow and all downhill. I made good time to the Army camp at the road end, where I caught a truck back to town.

Most memories of the home of the williwaw become pleasanter as the actuality recedes further into the distance. Among the pleasantest are those of my days in the hills.

An Appendix Concerning the Weather

The weather of the Aleutians has been the subject of infinite discussion and jest; like New England weather, it provides a ready topic for conversation. If you do not like it, wait five minutes, and it will change! It can give you rain, snow, sleet, hail and sunshine within an hour; but fortunately it has its better days.

In summer the winds are of fairly low velocity, but fogs are common. These come up very rapidly; I have seen them cover the whole island in half an hour. Usually they come from the south, but they may travel up the passes between the islands and envelop any particular island from the east or west, depending on local conditions of wind and topography. They usually enveloped Adak from the west. Very often envelopment is not complete; the leeward side of the island may remain clear, and the peaks there may be accessible under clear conditions. The fog layer may be from a few feet to some 4000 ft. thick, but commonly provides a high overcast which permits climbs on the lesser peaks.

In winter there is more good weather, but winds are apt to be high—15 to 35 knots, on the average—and storms far more severe. The temperature is not cold—usually about freezing, with low temperatures around 15° to 20°F. The cooling effects of the wind make heavy arctic clothing and wind-proof outer garments necessary. The snow cover varies widely. One winter will bring deep snows and avalanche danger; the next may bring barely enough snow to cover the ground. It rains as often as it snows in winter. Hence the mountains are frequently sheathed in coats of ice which make climbing both difficult and dangerous.

In the spring and fall, storms are frequent, and winds of well over 100 miles an hour are registered. Tents and Quonset huts disappear with astonishing rapidity, and the flight characteristics of lumber piles and even dories can be studied. It was generally considered a fair blow when stacks of one-inch boards were blown away; when two-inch boards began to fly, work was secured, and men retired to wait out the storm and hope for the best. In a severe storm the greatest hazard is air-borne sheet steel from disintegrating Quonsets. Good days for climbing can still be found, but the consequences of a mistake in judgment are more serious than in summer.

Return to the Alps

URSULA CORNING

THERE had been one summer after another of stifling New York heat—hands sticking to the table, body sticking to the chair—but there had been Alpine calendars on the desk to remind me of better things. Suddenly seven years were gone, and I was outside a chalet above Engelberg. The Spannörter stood black against a rising August moon, the scent of hay was in the air, and the sound of bells from the valley mingled with that of cowbells from the Alps out of sight. My host came out and stood beside me in silence. He was wholly sympathetic with my sudden and tactless outburst: "You may think I came to see you, but this is what I really came for!" Thank Heaven for understanding friends.

It had been a memorable day from the moment when we saw far beneath our plane the silver ribbon of the Rhône and a twinkling mass of lights that must be Lyon. Almost at once it was dawn, and we were winging in to Geneva over the lake. And there was patient Nina—we were two days late—standing beside her car, and before I could turn round I had been wafted to the familiar station buffet at Geneva, to two *cafés complets*. In spite of points, the butter was still in gold spirals, the yellow glycerine honey stood unchanged in its little pot, the bread tasted as good as ever. Then the wand waved again, and we were driving along the empty roads in the early morning light: Lausanne—Morat—Berne—Emmental—Lucerne—Engelberg. Everywhere there were flowers and robust, red-cheeked children. The scent of hay mingled occasionally with the richer, homelier odor of good strong manure. It was all so familiar: had I ever left it?

Actually I had not expected to climb. In the first place, my boots let in water, and I was doubtful if I could still go uphill; in the second place, I knew that G. (Alexander Graven, recent hero of the Matterhorn North Face) was booked for the whole summer. But after one day in Engelberg I felt immortal longings beginning to stir, and we set off for a family picnic on the Joch Pass, through clumps of early-flowering autumn gentians. The top of the Pass was the most cosmopolitan scene I had struck for some time, thanks to one of the new chair lifts, which are very popular in Switzerland today. Dutch Boy Scouts jostled Belgian millionaires; G.I.'s

skirted round French dowagers taking pictures; shabby English wandered about, looking as if they had been translated to the Elysian fields. As usual, nothing was easier than to escape from the crowds and lie on the fragrant mountainside listening to the distant thunder of avalanches over the Bernese Oberland and the persistent near-by squeals of marmots.

Two days later I was on my way to Zermatt: over the Brünig in a beautiful new all-glass coach, hanging out of the windows on the Lötschberg, gazing with gathering emotion at the familiar Zermatt valley—the rushing Visp, the fields starred with autumn crocus, the Breithorn coming nearer and nearer. I had no chance to become sentimental, for a creature resplendent in an orange shirt and a Tyrolese hat with a plume had dogged my steps from the Bernese Oberland, with an obvious desire to thrill the novice. His statement that he was a mountain guide was followed by a wealth of anecdote usually associated with other places than Switzerland. I became quite interested in his future deeds, but Zermatt engulfed this paragon without so much as a ripple.

Zermatt is changed, but it is still unique. There are more houses. There are fewer smells. (No more can one have a rendezvous, as in the good old days, between the first and second smells.) There are fewer guides sitting on the Monte Rosa wall, and they seem older. There are fewer climbers. But the goats still come tinkling through the village every evening, and Burgener still makes his heavy but unsurpassable mountain boots. Joseph Seiler has succeeded Hermann, and the Mont Cervin Hotel is modernized from top to bottom, but the Monte Rosa Hotel is unchanged, and of an evening you can still meet anyone in the world in the village street.

I made my way straight to the Villa Ultima, home of G., his charming wife and eight little G.'s. We fell on each other's necks and wept, and then we ate. Then there were all his photographs: Matterhorn North Face (12 hours, with G. leading all the way), Furggengrat, Katerinengrat on Monte Rosa. I remarked on a slight scarcity of hair on the top of G.'s head; G. found it unnatural for anyone to have spent seven years in "whiskey-land" without accumulating more taste for alcohol or for a lurid past. Frau G. poured out more tea, and the children asked about skyscrapers. Bad weather had arrived with me in Zermatt. Herr Sutter of the Matterhorn North Face could do nothing worthy of his mettle. G.

would do some small things with me till the weather improved, if I wanted. Did I want?

The next morning found us with English friends, going up and down the Riffelhorn like yo-yos. I was still aching in every limb when G. suggested that it might be well to sleep at the Trift and do the Ober Gabelhorn next day. So well trained am I, or so lacking in proper spirit, that I was only mildly surprised next day to find my untrained self, together with Otto Furrer and a young Norwegian, marching up that endless moraine on the Eseltschuggen, battling with snow and wind over the Wellenkuppe, the big gendarme, the Gabelhorn, and down the Arbengrat. But the Matterhorn was all pink in the dawn, and G. cooked a nectar called Ovo Sport on the top. We decided that I had shed the effects of war years; but, as every Zermatt mountain was by now plastered with snow, G. advised our departure for Rosenlaui in the Bernese Oberland, where the Dolomitic Engelhörner will "go" in almost any weather.

It was a happy choice. Rosenlaui is a huge, rambling, Victorian place, admirably run by Mr. and Mrs. Brog. The Engelhörner can be done from the hotel; and, if there is anything pleasanter than scrambling on sunny rocks in kletterschuhe, while the sound of cowbells floats up from the valley, I have yet to discover it. Every morning our fellow-guests gazed spellbound while we climbers devoured bowls of a local concoction called Birchermüsli, made of oatmeal, condensed milk and every kind of fruit, and guaranteed to keep the wolf from the door all day. (I understand that one of New York's creators of charm provides the same for her clients, at vast expense.) Every evening they watched in a wide circle while we played an acrimonious game of Battleship. Soon we were all on the most friendly terms. Rosenlaui has its own climbing school; abseiling down the side of the hotel is a favorite sport for rainy afternoons. Guides dropped in from Grindelwald, over the Grosse Scheidegg, for drinks. Young Schlunegger told of his desperate attempt on the Eigerwand, with a companion who survived that awful exposure only to perish a week later on the Engelhörner. We had two good days and one rain-washed day of climbing; and, when the weather forbade everything else, we struggled with the rudiments of billiards. There was never a dull moment at Rosenlaui.

I left the mountains sadly, to stay with a friend who has a farm in Bex, in the Rhône Valley. A few days later, as we were busily picking plums between showers, the children rushed out to announce a big strange man with an ice-axe. There stood G. No other mountain being possible, would I traverse the Diablerets? A minute later I was collecting my climbing things. G. spent the evening sorting plums, while my friend busied herself at the spinning wheel. They had a wonderful time bewailing the immoral modern customs which, according to them, are ruining the Valais. Incidentally, most chalets and houses all over the Valais now bear large signs: "Dress decently." I could see no reason for this, but my Swiss friends assured me gloomily that it is indeed most necessary.

Next day we were off on our voyage of exploration. Neither of us knew the country, and we had a storm about every two hours, so conditions bade fair to be interesting. Anzeindaz, at the foot of the Diablerets, is an idyllic little alp, abounding in cows, horses, pigs, sheep and hens; but the actual climb was quite an undertaking. The rocks, poor at the best of times, were plastered with snow and most difficult to negotiate. By the time we reached the top, we were completely shrouded in fog. It was only after several adventures with crevasses and false trails that we finally reached the deserted Oldenhorn Hut and dropped down to the Col du Pillon, like two dripping water rats, but more satisfied with our achievement than if we had traversed the Matterhorn.

G. mounted his yellow Post and disappeared to the north, while I dropped down the valley toward the golden sunset with a great warmth in my heart. The mountains were the same as ever; they had been waiting like faithful friends for those of us who had been exiles for so long, and they had admitted us again into their magic circle, where there is "no variableness, neither shadow of turning."

Operation Everest, 1946

CHARLES S. HOUSTON, M.D.

DURING the spring and summer of 1946, the U. S. Navy conducted one of the most unusual expeditions in mountaineering history. It was a small (but immobile) party of four climbers, with 40 men in support. Two members of the climbing party reached 29,025 ft. on the 33rd day, and the entire ascent was made without setting foot on ice or snow. The party experienced perfect weather for the entire period: the temperature never fell below 65° F., and there was no snow, rain, or even wind. Furthermore, the climbers slept between sheets in comfortable beds, ate three hot meals a day, and took hot baths at night.

How come? Well, the "expedition" was conducted in a steel altitude chamber at the Naval Air Station, Pensacola, Fla., in which the four volunteers lived for 34 days. Each day the pressure within the 12 by ten by seven foot chamber was reduced by a small amount, to simulate an ascent of 500 to 2000 ft. The "support party" of 40 doctors, mechanics and technicians operated pressure and ventilation controls, kept the subjects under 24-hour observation, and made numerous tests of their condition. Ten or 15 times a day a small communicating pressure lock was "taken up" to the main chamber with food and baths, or with technicians and doctors to perform the multitude of tests for which the project was planned.

The purpose of the five-week test—known as Operation Everest by the Navy—was to study physiological changes at altitudes so high as to cause unacclimatized man to faint within a few minutes from lack of oxygen. We did not try to improve our climbers' tolerance for lack of oxygen by drugs or diet—that will come later, perhaps—for the prime purpose of this "reconnaissance" was to study the normal, unaltered adaptations. True, this has been done before, in the Alps, Andes and Himalayas. Operation Everest differed from these great scientific expeditions in three important respects: first, the men went higher than man has gone before; second, many more numerous and complex studies could be made under the test-tube conditions of the project than under the rugged conditions encountered at the same altitudes in the mountains;

and, finally, the observers who studied the men at high altitudes were not themselves affected by lack of oxygen, and therefore could be more precise and impartial in their observations.

The four months of preparation concerned matters not ordinarily associated with expeditions: installation of comfortable beds, toilet and bath within the chamber; overhaul of heavy pumps and air conditioning equipment; and installation of diesel-powered electric generators to provide auxiliary power in case of accident. A complete analytical laboratory was staffed and equipped; and a small kitchen was organized, complete with an excellent dietitian, to provide the best possible food for the "climbers." A crew of 14 technicians stood watches around the clock to operate chamber controls and to observe the subjects. The various laboratory tests were performed by different teams according to an intricate program. All these preparations were extensive, even though they dealt with not a single piton, ice-axe, tent or sleeper.

After the take-off on July 1st, the four men "climbed" 2000 ft. each day up to 9000 ft. Then their rate of ascent was slowed to 1000 ft. a day up to 15,000 ft. Above this altitude they climbed only 500 ft. each day, occasionally spending two days at the same level until "high camp" was reached, at 22,500 ft. The period spent between 5000 ft. and 22,000 ft. was approximately the same as that spent by the successful Kamet and Nanda Devi expeditions. These expeditions, however, remained for several weeks between sea level and 5000 ft.

After a week above 20,000 ft., the four men made a "dash for the summit" on July 31st, climbing at the rate of 1000 ft. per hour throughout the day. At 27,000 ft. two requested oxygen, but the other pair continued on, reaching 29,025 ft. at 4 o'clock. There they remained for 30 minutes before dropping back to high camp for the night. On the following day two of the men wearing standard service oxygen equipment spent several hours above 45,000 ft. and reached 50,000 ft. for a few minutes, an altitude several thousand feet higher than has ever before been attained without pressurized oxygen apparatus.

During the whole month, the greater part of each day was occupied with blood tests, X-rays, physical fitness tests, exercise periods (on a bicycle), psychological tests, and brief periods of recreation (beer and movies nearly every night, for example). Tests were made of their ability to climb steps at a certain rate, both

with and without oxygen, at their high camp; and records of heart action were taken during this work. And of course each man's pulse, blood pressure, weight, and food intake were recorded every day.

What did it all prove? Can Everest be climbed? Will oxygen help? How can acclimatization be measured and improved? Some of these questions can be answered directly; others are still undecided. A great number of respiratory and circulatory measurements were made, some for the first time at altitude. And, for the first time in history, normal, sea-level men were able to study acclimatized men at very high altitude, and to note beyond all doubt that, although the men themselves felt well and considered themselves in good shape, they were in fact far from normal. Contrary to some prior observations, the men were definitely blue from lack of oxygen and not from cold; there were undeniable signs of dulling of thought. These observations alone would have made the project worthwhile. In addition there are, beyond the scope of this report, numbers of records and measurements which will gradually appear in the scientific literature.

Several observations deserve special emphasis. First of all, our subjects were not in as good physical condition as are most mountaineers at the same altitude and after roughly the same period of ascent. This observation came as a surprise; for we believed that their comfortable living conditions, excellent meals and moderate exercise would put them far ahead of the mountaineer, buffeted by storm, often cold, and usually tired and hungry. We attribute the difference to the fact that climbers are forced to do severe, often exhausting work, a stress which, superimposed upon lack of oxygen, probably stimulates the process of acclimatization more than does simple residence at altitude. The lesson was clear to us—heavy work unquestionably speeds adaptation to altitude.[1] On the other hand, none of our four subjects developed signs of mountain sickness, headache, vomiting, dizziness, which have been

[1] In his fascinating paper on "Mountain Sickness and its Probable Causes," written in 1906, Dr. T. G. Longstaff stated that poor physical condition and the excessive fatigue of climbing are the major factors responsible for mountain sickness. Conversely, he believed that seasoned guides and veteran climbers experienced few or no ill effects at high altitude because of their extraordinary physique and resistance to fatigue. He considered that mountain lassitude, due to lack of oxygen, affects nearly everyone, but that only the untrained or greatly fatigued climber would suffer mountain sickness. He did not consider that acclimatization to lack of oxygen itself occurs.

noted so often in train or car passengers in the Andes, Rockies and Alps.

When our subjects breathed pure oxygen at 22,000 ft., they instantly felt and looked much better, and their ability to work (as measured on the step test) increased. But—and this is a big "but"—even with oxygen they could not equal their sea-level performance. There was no question that oxygen helped them greatly, but it did not abolish the effects of altitude for these acclimatized men as it does for the unacclimatized man. Their main difficulty during work, shortness of breath, was not much improved by breathing oxygen—a phenomenon which is probably due to specific physio-chemical changes which occur in the blood as part of acclimatization. By the nature of this process, the better acclimatized to oxygen lack a man may become, the less reserve alkali will he have in the blood, and (since it is this reserve which protects him from shortness of breath during work) the more he will puff while climbing. Breathing oxygen relieves only the lack of oxygen; it does not alter the breathing difficulty. We must therefore conclude, partly from our observations and partly from theory, that the better acclimatized a man may become, the less benefit will he obtain from added oxygen.

The fact that our men could spend four hours above 25,000 ft., of which half an hour was spent at 29,000 ft., indicates that there is nothing critical, physiologically speaking, about the summit of Everest. That altitude is a little worse than is 28,000 ft., but not much.

The results of the dietary study were less definite. All four men lost weight (an average of eight pounds apiece), but they also lost interest in their excellent meals, which was definitely an altitude effect. Suggestive evidence indicated that vitamins, particularly C, increase the ability of the blood to carry oxygen. The red blood cell count increased moderately in all men, but there was no relation between the amount of this increase and the success of a man's acclimatization as compared to that of his companions. The blood count would possibly have increased more rapidly had the men been given supplemental iron, but for several reasons we do not consider an increase in the red blood count to be an essential, or even a very important, part of acclimatization. Some of our findings, taken with previous reports and analyses, support the belief that a high carbohydrate diet will increase altitude tolerance by

several thousand feet. Fats and proteins should, however, he added to the diet during sojourns at lower camps to replenish the body stores. We found no evidence of enlargement of the heart or serious changes in the electrocardiograms of these moderately working men as high as 25,000 ft.

Definite benefit was obtained by voluntarily increasing the depth of breathing by a small amount (perhaps 25%), and this was true during work and at rest. Even, rhythmic breathing was more effective than irregular, gasping respirations. But voluntary overbreathing must be practiced with caution, for it can cause most unpleasant results, even though it confers dramatic benefits.

From Operation Everest, then, we believe that there are no insurmountable physiological obstacles to keep man from reaching the summit of the Himalayas. Other conditions being equal, that climber who works the hardest during his slow ascent will acclimatize the best—though obviously one must not overdo this. At great heights a diet almost exclusively carbohydrate, with added vitamins, and iron (if tolerated well), has some advantages. Overbreathing, practiced only moderately if bad effects are to be avoided, is of definite and perhaps critical value at extreme altitudes, but it is a method which must be used with care. Finally, oxygen is of undoubted benefit, but it does not relieve the most annoying handicap of altitude, breathlessness on exertion; and there is reason to believe that the better adapted a man is, the less help will he receive from it.

Dynamic Posture in the Mountains

BECKETT HOWORTH, M.D.[1]

WALKING and climbing are simple, primitive motions common to all of us and to many animals. Walking is usually taken for granted, as we have walked since infancy, but it is often done poorly. Climbing is often considered a special skill and hazard because it is associated with the risk of falling, and the fear of heights and of falling is deep seated in many people. Most of us can learn to walk better. All of us can learn to climb.

A baby learns to walk alone at about 14 months—his legs apart, his movements quick and uncertain, his balance poor, especially for turning and for stepping up and down. Many adults revert to the baby stage. Many children as they grow older learn to walk well, with good balance and rhythm, sure, precise movements and great adaptability to the surfaces on which they walk and to obstructions in their paths, as well as to their own changing moods and desires. Few adults retain this skill, but most can reacquire it.

The postures of the body in action, or in preparation for action, constitute "dynamic posture." The term includes lying and sitting positions as well as standing, and also the transitions between them. It includes all the activities of our everyday lives at work and at play, as well as the special skills in arts and crafts, and in sports. There are certain fundamental principles which relate to all these activities.

BASIC STANDING POSITIONS

There are three basic standing positions: the erect position, the slouch of poor posture, the crouch of dynamic posture. In the erect position the head and shoulders, hips, knees, and ankles are lined up vertically. The spine is nearly erect, the chest somewhat expanded, the abdomen flat, the legs straight and the feet parallel; but there should be no tension. Better sideways balance may be secured by separating the feet a few inches. This is a good position for standing erect and in balance, but useless for action. Try

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[1] Much of this material has been drawn from Dr. Howorth's article entitled "Dynamic Posture," which appeared in *The Journal of the American Medical Association* for 24 August 1946. Thanks are due to the editors of that journal for permission to use the material and the drawings.—*Ed.*

to jump in this position! Poor posture is characterized by a forward movement of the hips and pelvis, causing an S-shaped curve of the body as a whole. The head shifts forward, the chest is flat, the abdomen sags and protrudes, and the knees flex a little. It is as though man, having attained the erect posture in the process of evolution, is now going beyond it, to assume eventually a reverse position on all fours. This position is not only poor physiologically, but also useless for action. Try it.

The basic dynamic position is a slight crouch with the hips, knees and ankles flexed, the trunk and head inclined forward, the arms relaxed but slightly flexed, and the weight forward over the balls of the feet. In this position the muscles are balanced and ready for instant and powerful action, and they act as springs to absorb the shocks which occur with action. The fore-and-aft stability may be increased by advancing one foot; the sideways stability, by separating the feet. The feet thus grip the ground more securely than in the erect position, preventing slipping, and increasing the thrust for forward movement.

The basic dynamic position is used in walking rapidly or upon difficult terrain or slippery surfaces, up and down hill, and in jumping, lifting, pushing and pulling, climbing and skiing. Good dynamic posture implies the use of the body or its parts in the simplest and most effective way, using muscle contraction and relaxation, balance, coordination, rhythm and timing, as well as gravity, inertia and momentum, to optimum advantage. The smooth integration of these elements of good dynamic posture results in physical performance which is easy, graceful, satisfying and effective and represents the best in the individual physical activity as well as in the physical activity of the individual.

Gravity pulls the body or its parts toward the earth. Inertia tends to hold the body still, or to maintain its motions at a constant speed. Momentum gives the body added power or impetus. Friction, including air resistance, tends to slow the body. Gravity, inertia, momentum or friction may be overcome or reinforced by muscle action. Acceleration or deceleration may be caused by an external force such as gravity or friction, or by the internal force of muscle action. These principles are closely related to walking in mountainous country and to skiing.

A muscle may contract or relax. A contracting muscle must work against gravity in pulling or pushing the body or a weight

upward; it is aided by gravity in pulling or pushing something downward. A muscle may relax and by thus letting go allow gravity to become more, or less, effective. Similarly momentum, inertia and friction may be resisted or reinforced by the proper application of muscle contraction or relaxation. Maximum power is attained by the contraction of the muscle in the most favorable relation to gravity, inertia and momentum, with a minimum of friction. The contraction need not be sustained; it should be continued just long enough to produce the desired effect. Thus tension and fatigue are avoided, and the muscle is free to perform further work. It is especially important that the normal phases of muscle relaxation be observed in walking downhill and in skiing.

Good balance is secured by maintaining the center of gravity of the body over the feet, through coordination of the eyes, the semicircular canals of the ears, and the position sense of the muscles and joints. When the body is moving forward, the center of gravity should be advanced to the balls of the feet, or in front of the feet, so that gravity will provide forward momentum. The trunk should lead the action rather than try to catch up with it, especially in glissading and in skiing, where the skis are sliding forward, causing the weight to tip back toward the heels.

Precision and smoothness are essential to good muscle action and low energy output. Timing is one of the most important and delicate phases of movement, especially of a complex and rapid one. Poor timing can reduce or invalidate the effectiveness of movement. Good timing makes the movement easier and more effective. Alternating contraction and relaxation with balanced timing produce rhythm in movement and increase the capacity for sustained action. Coordination is the smooth relationship in proper sequence of a group of muscle actions. Timing and coordination are perhaps the most important factors in skiing, jumping and glissading, but the least stressed and the hardest to teach. Precision, smoothness, timing, rhythm and coordination are the elements of good dynamic posture.

Walking

Walking is one of our simplest and most fundamental actions and may serve as an example of dynamic posture. The body is tilted slightly forward from the basic standing position and the weight thrown on the ball of the foot, while the other thigh is lifted and the leg and opposite arm are swung forward (Figure 1-B).

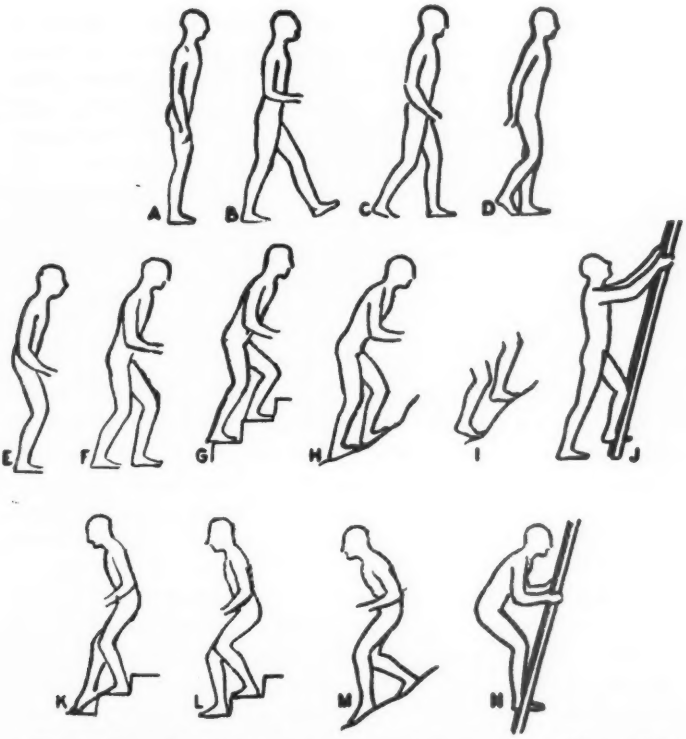


FIG. 1. Dynamic posture. *A*, basic dynamic posture for walking: slight crouch, slight flexing of the hips, knees, ankles, with trunk tilted forward slightly. *B*, walking, first phase: advancing leg extended, opposite arm flexed. *C*, walking, second phase: weight shifting to forward foot, rear knee flexed slightly, leg swinging forward. *D*, walking, third phase: rear leg reaching extended front leg, arm swinging back. *E*, basic dynamic position, crouch increased for walking rapidly or on slippery surface, up or down hill. *F*, same, walking rapidly or on slippery surface. *G*, same, walking upstairs: weight mainly on forward leg. *H*, same, walking uphill: heels down, reducing effort for calf but increasing effort for quadriceps muscle; impossible with contracted calf. *I*, same, walking uphill: heels up, reducing effort for quadriceps but increasing effort for calf as well as tendency to slip. *J*, climbing ladder: arms above shoulders, weight shifting to upper leg, hips and trunk well back for better vision and weight thrust; see *N*. *K*, walking down steps, first phase: moderate crouch, weight forward, one leg descending to step below, upper foot occupying whole step. *L*, walking down steps, second phase; same, but weight going on front leg on lower step; safest and most flexible position. *M*, walking down hill: moderate crouch, weight forward, entire sole on ground, reducing tendency to slip. *N*, descending ladder: position of dynamic posture; hands move down first, then trunk, finally foot; hips and trunk and head well back for better vision, weight thrust and balance.

Various muscles, aided by inertia, maintain the body in balance on the ball of one foot until the opposite heel strikes, when the weight quickly advances to this leg with the knee extended (Figure 1-C). Momentum carries the body forward over the extended leg until it passes the perpendicular, when the thrust of the foot renews the action and the process is repeated (Figure 1-D).

The front thigh muscle contracts for only a fraction of a second, with a sort of rippling movement, in swinging the leg forward. The muscles in front of the ankle contract briefly to prevent the foot from dragging just as it swings across the ground.

As the heel strikes, all the thigh and ankle muscles quickly contract to stabilize the knee and ankle until the weight is thrust forward again by the calf.

The flexor muscles in front of the hip swing the thigh forward. Then, as the weight goes on the leg, all the hip muscles contract to stabilize the hip, particularly those on the outer side, to prevent the pelvis from falling to the inner side. The opposite arm swings forward with the leg by contraction of the shoulder and elbow flexors, then swings back by the action of their antagonists. These motions are greatly aided by the pendulum effect of the swing.

Correct walking is done with a smooth rhythm, the muscles contracting gently with a brief wavelike action and relaxing in the interval. It is characterized by free muscle and joint action, momentum, balance and rhythm. Effort becomes much greater if the speed is increased or if momentum and rhythm are disturbed.

Walking is often done badly, with the body erect and stiff, with sudden jerky movements, tense muscles, precarious balance, needless jolts and a lack of rhythm. The steps lack spring and the flexibility needed to meet unusual situations. The good walker should be able to change pace, stop, start, turn, step up or down, twist or stoop, easily and quickly, without losing balance or rhythm. A good dynamic posture and flexible healthy muscles are the basis for correct walking.

Shoes should be comfortable and of proper shape and fit. High heels and pointed toes prevent good walking. Clothing should be comfortable, not too heavy, and should allow freedom of movement. Crowded city pavements and dirty, fume-laden air usually promote bad walking posture; the varied topography and surfaces and the clean air of the country make good walking posture easier.

Walking may be affected by pain, fatigue, weakness or stiffness. Pain may be caused by an injury, such as a sprain, a bruise, a blister, a corn or arthritis. Weakness may be due to many things, such as lack of sleep, improper diet, illness, heat and humidity, a poor heart, lung disease, or nerve or muscle damage. Stiffness may be due to muscle or joint damage, tense or contracted muscles. Fatigue is due to poor physical condition, or to exceeding the capacity of the individual as to speed, distance and load, especially up and down steep and difficult slopes.

Speed may be acquired by increasing the crouch and the forward tilt, thrusting harder with the legs, and developing a longer arm swing. The length of stride should not be too great, as the effort of forcing the body to reach the forward leg becomes excessive, or too short, for energy is wasted in swinging the legs too many times. The same principles apply in running.

Walking uphill or upstairs may be made easier, safer and faster by leaning forward in a deeper crouch and forcing the body well forward on the higher step (Figure 1-G, H, I). Breathing should be deeper rather than faster and in rhythm with the other movements. There should be no tenseness of the muscles, for this results in quick fatigue. Nor should there be any disturbance in rhythm or smoothness, as one will quickly lose rather than gain in accomplishment.

Walking downhill also requires a forward lean and slight crouch to reduce the shock of each step as well as the chance of slipping. In this position the center of gravity is low (Figure 1-K, L, M) and the muscles are in position to respond to any need. The weight comes down on the whole foot, the whole step is used and the foot grips well. One can thus double up and protect oneself much easier in case of a fall. On very steep slopes a slight turning to the side or zigzagging will help. Relaxation is most important in downhill walking, especially "loose knees." The movement then becomes almost a dance, with light quick steps, or a series of slides, similar to skiing. Small jumps may often be used. The knees are usually kept close together in this technique. The crouch brings one closer to the ground, with the muscles and joints acting as springs, minimizing the possibility and danger of a fall. Most falls are backward, with the body extended in a blind direction, the weight coming hard on the coccyx or wrists. These falls can be avoided by the method mentioned.

The pace is varied according to the difficulty of the terrain, the capacity of the walker, and the need for hurry. Most walkers do better if they adopt an easy pace and can thus maintain rhythm and relaxation. Speed is adapted to varying conditions so that the energy output is fairly uniform. Sometimes it is desirable to rush a short bit, especially with a heavy load, as considerable energy may be wasted in forcing oneself slowly up or down. Similarly, the climber may advance by quick rushes in the face of a very strong wind, especially if it is laden with snow or sleet. A rest period of five minutes every hour is usually desirable, especially if the climbing is difficult or the load heavy. If more rest is required, it should be taken more frequently rather than for a longer period. It is better to take rest lying down, unless the effort of getting up and down and of removing the load minimizes its value. It is often possible to find a boulder or other seat at thigh level for sitting, and the rucksack may be supported at the same level for a short rest without removing it. Short rests may be taken standing, leaning forward from the hips with the arms supported on the ice-axe or the advance knee; thus no energy is wasted getting up and down. The breathing should be free when resting. Rest periods may well be timed to fit in with views, photography, meals or even a swim.

Normally the whole foot should be placed on the ground. Walking on the toes reduces the strain on the front thigh muscles, but increases that on the calves and on the ankles. Toe walking is suitable for short distances steeply uphill on narrow trails or stairs; but usually it is better to turn the feet to the side, together or in herringbone fashion, and use the whole foot. Proper placement of the foot is important, so that it will be as nearly horizontal as possible, on a solid surface, and one which is not slippery. Usually bedrock is safer than grass, gravel, damp soil, slippery logs, snow or ice.

The security of the foot may be increased by increasing the area of contact, pushing into the surface perpendicularly or pushing the side of the foot against an adjacent surface. The instep may be more secure than the ball of the foot on a rounded surface; the heel is usually least secure. The hands may be used for balance or even for assistance in pulling up steep places, but the bulk of the work should normally be done by the legs. Facing out is usually best in climbing down, but in difficult climbing it may be preferable to face sideways or even inward toward the face of the ladder or steps (Figure 1-J, N).

Mountain climbing consists largely of walking, on the level and up and down hill. The basic principles of dynamic posture apply

to walking on snow and ice as well as to walking on soil and rock, but consideration must be given to the softness or hardness of the surface and to the tendency to slip. The center of gravity of the body must remain over the balls of the feet or, in forward motion, in front of them. When one foot is advanced, the trunk weight must be shifted to the leading foot before the rear foot is lifted. In sidestepping on skis or herringboning on foot or on skis, the weight is shifted to the uphill foot before the lower foot is raised. Movement on treacherous surfaces must be particularly smooth, precise and light, with good timing. Keep the weight over the balls of the feet, or in front of them!

There are three exceptions. In going face downhill on snow the heel may be dug in, to make a step, by stepping hard or jumping on the heel. The weight thrust goes on the heel, but the center of gravity should still be forward. The same principle may be used in glissading down a steep slope if it is not hard. In climbing a steep face or overhang with the weight hanging partly from the arms, the toes press against the rock with the heels down and the weight back in order to prevent the feet from slipping from the face, like a bracket on the wall. The same principle applies in leaning out on a foot or ski traverse, but the trunk is leaned out and the knees inward in order to give the edge of the boot or the ski a better grip on the surface. Some of the older skiing techniques required the weight to be back on the heels, especially for turning and stopping, but have been superseded by the newer and more effective techniques with the weight well forward. However, the weight should be kept back on the heels, hips back and trunk inclined forward in walking steeply uphill on foot or on skis if the surface is slippery, in order to prevent the foot or the skis slipping backward. Similarly in snow-plowing or glissading, in changing suddenly from fast to slow snow, the weight should be kept back, as the body tends to fall forward because of the resistance of the snow. In glissading the heels are dropped as brakes in order to stop or go slower, and the weight is tilted back to prevent a fall forward; to go faster the toes are dropped so that the feet are parallel with the surface, and the weight is kept well forward.

When a weight such as a rucksack is carried on the back, the center of gravity is shifted backward; therefore the body should be tilted further forward, particularly in making a sudden forward or upward movement. Weight-lifting should be done from the crouch position, using the legs rather than the spine for the lift. Similarly, pushing or pulling a weight, such as a boulder,

should be done with the body in a crouch, the weight close to the body, using the movement of the whole body, all in one direction, for the combined effect of muscle action and momentum. Falls on slippery surfaces are nearly always backward, and often result in fracture of the wrist, or even the coccyx or the spine. It is impossible to see or to double up to protect oneself in falling backward. It is almost impossible to slip on a slippery surface from the crouched position because the feet grip much more firmly. Falls from this position are forward: one can see and double up for protection. But such falls rarely occur except from tripping.

Walking a log, or along a narrow ridge, or over boulders, often involves a mental hazard which causes marked slowing of the pace. The balance is not so good at a very slow pace as at an average pace, and it may be still further disturbed by the loss of momentum. It is like riding a bicycle: it is almost impossible to balance at a very slow speed, but a little speed makes balance easy. One should not rush, however, for time is needed to see and choose footholds, and wild scrambling is precarious. It is best to note the footholds ahead, and then to proceed with a smooth, steady pace. The feet should advance straight ahead in the ordinary position, or turn moderately outward in the herringbone position if the grip of the instep is needed. The surest way to fall off a log is to turn and walk sideways. The chance of recovery by grasping the log is much poorer, too.

Jumping

Jumping is done now and then in the mountains, across logs or boulders, a stream or a crevasse. The usual jump is a leap, springing from one foot and landing on the other, with a standing, stepping or running start, and a stepping or running finish. The leap may be broad, to clear a wide space, or high, to clear an obstacle or rise to a higher position. When the forward motion is to be continued on landing, the feet are used successively as in running, and the weight is kept forward. When the landing is uncertain and stationary, or after a downward leap, the landing is often made on both feet simultaneously, with one slightly ahead for greater stability and the weight slightly back for stopping. Jumping from both feet is possible, but more difficult, because there is less spring and momentum, although the initial footing is more secure. The arms aid in lifting the body by leading the movement from the crouch position, followed by the trunk, and finally the rear leg. Precise timing is most important.

An obstacle may be jumped, hurdled or vaulted, depending upon its size and stability and the ability of the jumper. The legs are drawn up and turned to one side in hurdling. The standard high jump of the track athlete, running in from the side and swinging the near leg forward and over, followed by the rear leg, may sometimes be used. The track high jump in which the body is rolled horizontally over the obstacle is unfamiliar to most mountaineers and would usually be dangerous. Vaulting may be done with one hand and arm for balance and support, directly over the obstacle or with a sideward turn resulting in an about-face of the body. Try these various jumps yourself. Become familiar with them so that you will know how far you can jump safely, and which jumps you can do best. Just before the War one of the best Italian guides lost his life by failing to clear a crevasse when he jumped. Also practice with boots and rucksack if you expect to wear them in the mountains, and remember the effect of fatigue on the ability to jump well. It may help to grasp a rucksack strap with the hand to steady and balance it. It is safer, in case of doubt, to climb rather than to jump, or to go around the obstacle, particularly if there is a definite hazard below or on the other side.

Rock Climbing

Rock climbing is similar to creeping or crawling on all fours, except that the body is nearly vertical rather than horizontal. Accordingly the weight is carried largely by the legs, and the arms are used chiefly for balance. Occasionally the weight is borne largely or entirely by the arms, when there are no footholds and the rock is vertical or overhanging. Ordinarily rock climbing is done entirely with the hands and feet, the remainder of the body being kept well out from the rock for better balance and support, wider vision and the avoidance of friction. The climbing may be done largely with the fingers and toes when the rock is steep and the holds small.

A rock surface may be a face, ridge, inside corner, crack or chimney. The face is the most common surface, but varies considerably in smoothness and angle to the horizontal. Face climbing is relatively easy. The technique is simple as long as the surface is not too smooth or too nearly vertical. Ridges are also common and the technique for climbing them is similar to that for climbing faces. A ridge consists of two rock faces at an angle between zero and 180 degrees. A narrow ridge can be straddled and the legs and arms squeezed together for firmer holds. A narrow ridge

which is nearly horizontal may be sat upon astride (*à cheval*), but friction and the nearness of the hands interfere somewhat with movement. Such a ridge may be easily crossed by hanging from it with the hands, with the feet pressed against the face below and the hips well out from the rock, moving sideways in a hand traverse. An overhang is climbed similarly, except that the movement is upward. Often the effect of an overhang can be reduced by climbing obliquely instead of directly upward. An inside corner is the reverse of a ridge, the rock faces making an angle of about 90 degrees. The inside corner may also be straddled if there are footholds. If there are holds on only one side, the back, shoulders and hip may be pressed against the smooth side for friction holds, a modified chimney technique. A chimney is formed by two opposing rock surfaces wide enough for the body, but not too wide to reach across. It may be open on one or both sides. A chimney may be climbed astride if there are footholds, or by wedging the body between its walls for friction. The back is placed against one side, usually the smoother and more vertical, and pressure made against the opposite side with one or both hands and feet. Movement upward or downward is made in caterpillar fashion, the back being moved while pressure is made against opposite sides with opposing hands and feet. There are several variations of the basic position. A crack may be climbed by wedging or twisting some part of the body in the crack to maintain sufficient friction. Holds are maintained by pushing or pulling against the rock with the feet and hands.

Footholds usually consist of standing on a ledge of rock with all or part of the foot, gravity furnishing the pressure necessary to prevent slipping. When the hold is narrow, sloping or smooth, more inward pressure must be used to prevent slipping. This may be accomplished by moving the hips and knees away from the rock and lowering the heels. The foot, knee or elbow can be inserted in a crack and twisted to produce sufficient pressure and friction for a hold. The step upward should not be too long for much more effort is used in straightening the hip or knee when it is flexed beyond a right angle (90 degrees). The knee should rarely be used as a direct hold in place of the foot, as much of the flexibility and strength of the extremity is lost, and there is more danger of pushing off rock. Similarly one should not sit on the rock or slide the hips across it in climbing down, as a rock may be precipitated

on someone below. Press or pull directly into the rock, especially when it is loose, rather than sideways, which might detach and pull it off. Climb cleanly. Keep three holds on the rock while shifting the fourth. Shift the body weight onto the advanced hold before moving the rear hold.

The mechanics of rappelling are similar to those of an overhang except that the rope replaces the handholds. The hips are kept away from the rock, the feet pressed against it at a level which produces sufficient friction. The hips and knees should be kept almost straight; if they are allowed to flex, the thigh may be pulled up against the chest when it cannot be extended. The beginner tends to lean in toward the rock and thus his feet tend to slip off. Make sure the rope is secure, and then lean out!

The body is used in snow and ice climbing in the same manner as for walking and rock climbing, the difference being due mainly to soft or loose snow and to smooth slippery ice. The climber must move softly and smoothly on soft snow, to avoid falling through, planting the weight evenly on the whole foot. The knees should be kept flexed a little to prevent the knee being suddenly forced back if the heel gives way. On smooth ice it is most important to have the footholds as nearly horizontal as possible and to center the weight over the ball of the foot.

Movement is the basis of dynamic posture. Good dynamic posture is common to such animals as the cat and the horse and often to children and primitive man, but is uncommon in adult civilized man. Watch the movements of a cat. A few individuals develop good dynamic posture naturally and instinctively, but all of us can acquire it by study and training, and apply it to all our activities. Good dynamic posture frees one from tension and gives the body a feeling of lightness, of moving through space, rather than being earthbound. The body then becomes the instrument of the individual rather than the anchor dragging at his day's activities. The tendency to fatigue is reduced, leaving more energy for other things, more endurance. Accidents are far less common with good dynamic posture. The principles of good dynamic posture—precision, smoothness, power, balance, good timing, rhythm and coordination—may be used not only for the physical body in action, but also as an approach to life.

American Alpine Club Research Fund, 1946

JOEL E. FISHER, WELDON F. HEALD *and* MAYNARD M. MILLER

The American Alpine Club Research Fund was established in 1945 to promote scientific, literary, educational or historical research and publication related to mountaineering, geology or geography. Donations to this Research Fund have been ruled by the United States Treasury as deductible for income tax purposes. Christine L. Orcutt, Weldon F. Heald and Joel E. Fisher are the appointed trustees. In the ensuing pages, projects of the year 1946 are reviewed.

1. BIBLIOGRAPHY OF AMERICAN MOUNTAIN ASCENTS

The American Alpine Club Research Fund sponsored publication in May 1946 of the 299-page *Bibliography of American Mountain Ascents,* edited by Joel E. Fisher. This bibliography is an index, by mountain peaks, of the following journals, through 31 December 1945:

Alpine Journal
American Alpine Journal
Appalachia
Canadian Alpine Journal
Club Andino Bariloche
Club Andino Chileno
Harvard Mountaineering Club Bulletin
Mazama
Mountaineers
Sierra Club Bulletin
Trail and Timberline

The peaks are arranged according to the several geographical areas of North, Central and South America. Copies may be obtained from the American Alpine Club. The price is $2.50, postpaid. Proceeds will be credited to the Research Fund.

2. STUDIES ON FORBES DIRT BANDS

In 1942 I published a paper on Forbes dirt bands—the concentric parabolic bands of dirt observed on certain few large

glaciers, notably the Mer de Glace. The conclusion was that these bands represent the survival, on the lower (dry) trunk glacier, of the dust accumulated on the surface of the névé above the icefall, the elevation of the area of the névé close to the brink of the icefall

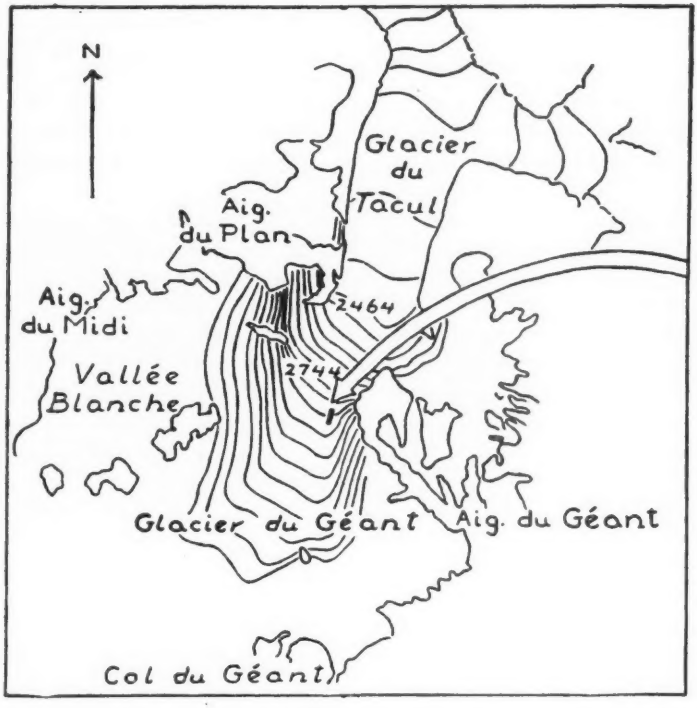
being necessarily low enough to insure greater melting than accumulation of snow over the years. The theory was offered that this slightly dirty surface of the névé would ride on down through the icefall, surviving as the surface of great glacier-wide blocks of ice which slither down, fairly intact, through the icefall, and that glacier-wide crevasses between such blocks in the icefall would eventually fill up with clean ice which would slough off from their sides, resulting in inlays of clean ice, at the base of the icefall, between the stripes of surviving dirty surface, when the whole re-consolidated into a flat glacier.

It seemed desirable to carry on some experiments to test this theory. It was therefore decided to clean off the surface of a substantial area, to the depth of three inches, on the névé above the icefall on several glaciers where such Forbes bands had been identified. Some years later, bands formed below the icefalls on these glaciers could be re-examined. If the cleaned areas survived as clean paths cutting across the bands, the theory would have been substantiated. In the Alps, the Géant (source of the Mer de Glace), the Trift (Gotthardmassif) and the Arolla Glaciers appeared to be suitable for experiments; in the Canadian Rockies, the Alexandra Glacier was a possibility.

Arrangements having been made with the Treasury Department for the purchase of sufficient free Swiss francs, Felix Julen, guide, of Zermatt, was engaged and instructed by correspondence, and in personal talks with Miss Ursula Corning, as to the requirements for the experiments; and he was provided with the necessary maps, funds and equipment. The season of 1946 proved to be exceedingly snowy in the Western Alps. Repeatedly Julen reported that the névé above the icefalls on all the glaciers was constantly too deeply covered with fresh snow to permit him and his assistant porters to clear away the surface to the underlying (dry) névé. It seemed that all experiments would have to be deferred until 1947. Eventually, in late September, he found that enough snow had disappeared on the Trift Glacier névé. Accordingly he took a corps of porters over to Meiringen and cleaned an area 100 meters long by seven meters wide, to a minimum depth of five centimeters, at the point indicated on the first map.

Despite the excessive snow on the Glacier du Géant, an alternate experiment was performed there. Felix Julen was again in charge. Thirty small piles of brilliantly colored glass beads were deposited at intervals of five meters along a straight line, 150 meters in length, above the icefall. Both ends of the line were marked by long wooden poles securely driven into the snow. As this line moves down through the icefall, it is hoped to measure and re-measure the spacing of the piles of beads, and thus to conclude whether the glacier-wide crevasses in the icefall are closed up by the coming together of their two sides, or whether they fill up with ice debris sloughing off from their sides. Also, if the piles of beads are found to survive only in the dark bands below the ice-

fall, the theory will again be substantiated. It will be some 15 years before this can be fully determined. The original (1946) line is indicated on the second map.



Meanwhile, John C. Oberlin and Fred Ayres had kindly offered to attempt an equivalent experiment (dyeing the surface of the névé above the icefall) on the Alexandra Glacier in the Canadian Rockies. That icefall is exceedingly difficult, as photographs will show—and it is a hard one even to approach. They made a valiant effort, but were finally compelled to give up the attempt to reach the névé.

Sufficient funds are on deposit in Zurich to insure the completion of the Swiss experiments. During 1947, if snow conditions permit, work will proceed on the Arolla Glacier. Final conclusions will not be available until about 1960, by which time the sur-

face areas cleaned of dust should have moved down through the icefall to the lower dry glacier. It is expected that the cleaned areas will then appear as clean white areas cutting across one or more parabolic dirt bands, below the icefall.

JOEL E. FISHER

3. PALISADE GLACIER SURVEY, SIERRA NEVADA

Glaciers are the world's most sensitive indicators of climate changes. Their life depends on a delicate balance of interrelated climatic factors, and they wax or wane with the slightest change in any one of numerous variables.

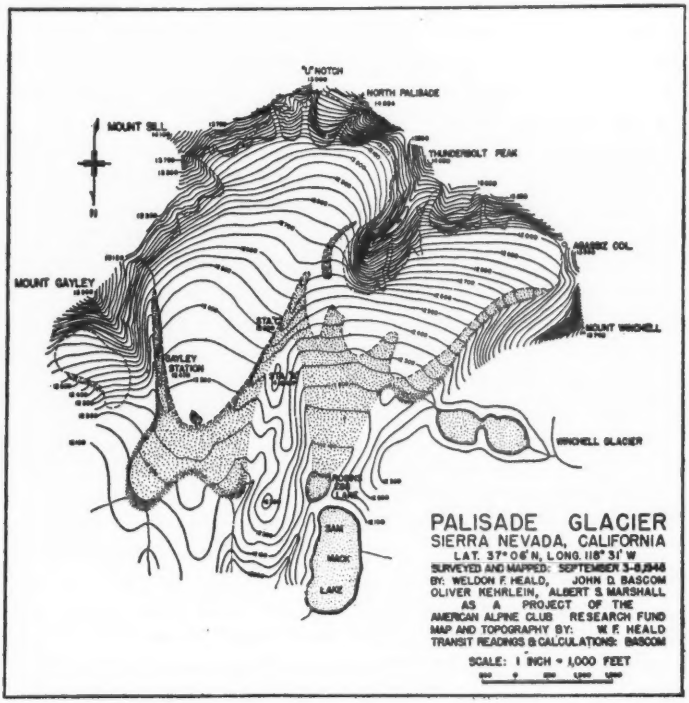
Attempts have been made to correlate variations in glaciers with changes in climate, both in tracing the past and in predicting the future. So far, the study of the bones of dead glaciers—their moraines, cirques and tracings on rocks—has been more successful in reconstructing past climates than have the measurements of variations in existing ice bodies in proving anything about the present and future. However, the measuring, recording and systematic photographing of living glaciers is relatively new, and it is hoped that the mass of data which is being assembled each year will lead eventually to definite mathematical relationships between glacial changes and climatic trends. Then we may be able to predict tendencies in climate upon which may be based practical estimates of snow storage and water supply.

Such studies, necessarily halted during World War II, were resumed this past season both in this country and abroad. One of them, a survey of the Palisade Glacier in the Sierra Nevada of California, was undertaken in September 1946 as a project of the American Alpine Club Research Fund.

The Palisade Glacier was selected for study because it is one of a group of ice bodies which have recently retreated until they are at the critical stage of delicate balance between névé fields and true glaciers. These small icefields would seemingly be the first to respond to minor changes in climate. And it is the present glaciers of the Sierra which hold the key to the past glaciation of the West Coast.

The survey proposed to map the Palisade Glacier on a large scale with reasonable accuracy, the map forming a base upon which changes in the glacier will be recorded on overlays of the same scale. These overlay maps will be made from resurveys of the glacier at suitable intervals in the future. A careful check

with monthly climate data of South Lake, the nearest mountain weather station, will be made in an endeavor to discover a relationship between the climate in that part of the Sierra and the observed variations in the glacier. In addition, comparison photographs will be taken at each resurvey from known points established by the survey in 1946.



The basic survey was accomplished, and the map of the Palisade Glacier has been drawn. Nothing is claimed for the Survey, however, except that it furnishes additional data for the extremely important study of world glaciation in relation to climate. Frankly, its comparative importance resembles that of a rivet in the Empire State Building.

I will not burden this short report with an account of the actual surveying of the glacier. Anyone who is interested in the procedure will receive full details by writing me in care of the American Alpine Club.

There are approximately 50 known active glaciers in the Sierra Nevada. They are found from Sawtooth Ridge on the northern boundary of Yosemite National Park to Split Mountain, a distance of 105 miles. Most of them are small, clinging precariously to life in shady cirques high up under the loftiest summits at elevations of 12,000 to 13,000 ft. Even Palisade Glacier, the largest, is under a mile and a half in greatest dimension. Nevertheless, it is remarkably impressive in its alpine setting of 14,000-ft. peaks, and it exhibits all the characteristics of much greater glaciers—bergschrunds, crevasses, glacier tables and moraines—lacking only the tumbled séracs of icefalls.

The glacier is one of a chain of ten ice bodies which lie along the N. E. slope of the Palisades for a distance of ten miles. Probably all of them have glacial motion and are thus the southernmost known glaciers in the United States, but until the icefields of the Kaweahs and the Mount Whitney region are thoroughly studied for motion a positive statement cannot be made.

The Palisade Glacier is located in Inyo County, California, at Latitude 37° 06′ N., Longitude 118° 31′ W. It is situated in a double, north-facing cirque at the head of Big Pine Creek, which flows down a steep mountain canyon to Owens Valley at the E. base of the range. The glacier occupies a gently sloping shelf or basin measuring one and a half miles from E. to W. by about a mile from N. to S. The lower edge of the basin drops steeply 1500 to 2000 ft. to the canyon of Big Pine Creek, while it is backed by a precipitous headwall averaging about 1000 ft. in height.

The high points of the headwall overlooking the glacier are, from E. to W., Mount Gayley (13,550 ft.), Mount Sill (14,100 ft.), North Palisade (14,254 ft.) and Thunderbolt Peak (14,000 ft., plus).[1] Further to the N. and W., completing the rim of the basin, although not a part of the headwall, are Mount Winchell (13,749 ft.) and Agassiz Needle (13,882 ft.). The last two peaks contribute no snow to the Palisade Glacier but support small gla-

[1] It is interesting to note that, if the Survey's field data are accurate, Thunderbolt Peak becomes California's fourteenth 14,000-ft. peak. The Survey calculated its altitude as 14,090 ft. This figure may be somewhat high, but it is doubtful that it is in error by as much as 90 ft. The U. S. Geological Survey gives the altitude of Thunderbolt as between 13,900 and 14,000 ft. It is a distinct peak, separated from North Palisade by a 500-ft. gap—a deeper gap than separates the latter from Mount Sill to the E.

ciers on their N. sides. Mount Sill also has a glacier under its N. E. face, which drains into the South Fork of Big Pine Creek, the next basin to the S. E.

The Palisade Glacier is divided into an eastern and western lobe by a buttress running N. E. from Thunderbolt Peak. Each lobe ends in a distinct snout separated by a cleaver, but a large portion of the ice in the lower section of the W. lobe is furnished by an overflow from the E. lobe. This "icefall" spills from the central section of the E. lobe down a steep slope between the buttress and the cleaver.

The eastern, or main, lobe rises directly under the headwall between Mount Sill and Thunderbolt Peak and extends 5475 ft., measured along the center line of flow, to the terminal moraine beneath which the ice disappears. This lobe measures approximately 3000 ft. at its widest part. The W. lobe extends at a comparatively steep angle along the headwall under Thunderbolt Peak and unnamed points (13,850 ft. and 13,650 ft.) to Agassiz Col, where the headwall breaks down at 13,000 ft. The distance from the col to the western snout along the center line is approximately 5000 ft. The greatest overall dimension across the two lobes is 6450 feet. This is an almost E.-W. line from Agassiz Col to a point under Mount Gayley. The glacier has a vertical extent of about 1000 ft., the main lobe dropping from a maximum of about 13,200 ft. against the headwall to 12,250 ft. at the terminal moraine. The moraine-covered snout of the W. lobe ends at an elevation of approximately 12,075 ft.

Along the upper margin of the glacier, beneath the headwall, are almost continuous bergschrunds separating the moving ice from precipitous masses of névé and numerous ice-filled couloirs which extend in places to the top of the headwall. Late in the season these bergschrunds attain a width of 15 ft., leaving 20-ft. névé walls on their upper sides. Several secondary bergschrunds develop below the main ones, but on a much reduced scale.

In 1946 very few crevasses were in evidence, these mostly concentrated below the N. W. buttress of Mount Sill. Even the "icefall" between the two lobes showed a remarkably smooth surface. Although the entire glacier was not visited by the survey party, the largest crevasses observed were not over three feet wide. In 1933, however, Kehrlein reported two major centers of crevasses in the E. and W. sides of the upper main lobe.

Nineteen forty-six was a poor year in which to observe surface features of the glacier. Although very little snow fell during the winter, the past ten seasons have averaged heavier than normal. This has resulted in a large part of the glacier being snow-covered throughout each season. Comparison pictures of 1940 and 1946 show a noticeable increase of névé above the bergschrund, with an extension and deepening of snow on the glacier surface which has obliterated numerous rocks and the lower parts of the main lobe's medial moraine. In addition, four inches of new snow covered the glacier during the period of the survey. Glacier tables, a feature of the Palisade Glacier, were poorly developed in 1946.

It is impossible to estimate the extent of ice in the Palisade Glacier, the lower ends of both lobes being completely moraine-covered. The lateral moraines of the main lobe come together in a bow, forming a terminal moraine nearly 50 ft. high, under which the ice disappears. A small pond, collecting the glacier's surface drainage, has formed on the ice at this point. The well defined moraines of the main lobe continue below the present terminal moraine and form two distinct snouts, the easterly one ending approximately 1600 ft. distant from the present visible ice, at an elevation of about 12,075 ft. The principal drainage, however, issues from the short W. moraine at approximately the same altitude.

Perhaps fully 40% of the glacier's W. lobe is completely moraine-covered. Its lower portion is hidden under a confusion of rocks, without a trace of visible ice, ending precipitously in Robins Egg Lake.

Ice may underlie the entire extent of the moraines, as is shown on the map, or it may have almost completely melted away. It is impossible to say. Ice is visible in several places within the morraines some distance from the active portions of the glacier, but this may have been formed by the freezing of water-saturated silt. The lower faces of both snouts of the main lobe moraines were actively avalanching in 1946, appearing well saturated with moisture. Such instability may be recent or, at least, unusual, for the avalanched material was of small extent. Kehrlein reports, however, that this condition prevailed in 1933.

UPPER PART OF WEST LOBE, PALISADE GLACIER
To Agassiz Col from Station "A"
Photo, W. F. Heald

SURVEY PARTY OCCUPYING STATION "A" (12,417 FEET)
North Palisade (14,254 feet) is in the background
Photo, W. F. Heald

Of additional interest are the two small streams issuing from under the E., or longer, moraine of the glacier's main lobe. These milky riverlets appear to be of recent origin as the deposit of glacial silt in their beds was infinitesimal compared to the layers built up by the main drainage streams. The feeling, although subjective and not susceptible to proof at this time, was of renewed activity and instability in the moraines of the E. lobe. The W. lobe moraines were not closely inspected in 1946.

It is interesting to note that if ice completely underlies the moraine system of the Palisade Glacier its extent, although not its thickness, is as great today as at any time during the past 4000 years; for these raw and unstable moraines do not represent the last stages of Pleistocene glaciation, but rather outline the exact maximum extent of a recent resurgence of Sierra glaciation—a sort of "Little Ice Age" which is not over yet.

Glaciers in the Sierra Nevada have proved especially helpful in checking and plotting the variations in climate since the last Pleistocene ice maximum, known as the Wisconsin Stage of glaciation. But François Matthes of the United States Geological Survey was the first to realize that present-day California glaciers are not remnants of Pleistocene glaciation. Those huge ice streams melted away completely about 4000 years ago. Dr. Matthes pointed out that the raw, new moraines of the present glaciers, many of them containing stagnant ice, have no connection with the larger moraines some miles down the valleys, which are obviously several thousand years old.

This is true of the Palisade Glacier. Below the new moraines is a steep, rough granite slope carved by ancient glacial action but showing no recent morainal material. Enough soil has been built up in pockets and cracks to support an extensive open forest of lodgepole and foxtail pines. The survey party cut a branch, six inches in diameter, from a tree growing within 800 ft. of the front of the main lobe moraine. Its rings showed 168 years of growth. The trunk was twice as large, or possibly 300 years old, while trees of three times greater diameter were observed 100 ft. below. Dead trees of large size lay within the forest in various stages of decay, so that it is reasonably safe to assume that the Palisade

UPPER PART OF MAIN LOBE, PALISADE GLACIER
Mount Sill rises to 14,000 feet
Photo, W. F. Heald

LOWER 2000 FEET OF PALISADE GLACIER
Lateral and terminal moraines of the main lobe from Station "C"
Photo, W. F. Heald

Glacier has not had greater extension for at least 1000 years. The nearest Pleistocene moraines appear to be at First and Second Lakes, two miles down the canyon of Big Pine Creek.

Related observations brilliantly check Dr. Matthes' deductions. Owens Lake, a desert body of water without outlet, on the E. side of the Sierra Nevada, was tested for the amount of salinity or mineral salts it contained. It was found that the present salt content would take roughly 4000 years to collect. Borings showed that the lake inherits no salinity from the much larger Pleistocene body of water, since those ancient salts are buried under sediments on the modern lake floor. Therefore there must have been a warmer, more arid period about 4000 years ago, at the time that Owens Lake dried up. This was the period when all Sierra glaciers disappeared, for today they are much too small to withstand any further warming or drying of the climate.

But the greatest independent corroboration of Dr. Matthes' theory is brought to light by a study of ocean levels during past glacial stages. The amount of ice now covering the Earth, according to R. L. Daly, is equivalent to about 4,300,000 cubic miles of water. This ice, if released through melting, would raise the sea level 164 ft. According to the same authority, the volume of ice at its maximum was enough to have lowered the oceans 246 ft. below their present levels.

Hawaii, Samoa and other volcanic islands of the Pacific rise from an ocean floor which has probably remained stable for millions of years. Ancient sea levels can plainly be seen on these islands. The story told by these strand lines of the Ice Age and succeeding periods exactly checks with land observations made in glaciated regions. The lowest level, now over 200 ft. below the ocean surface, made during the maximum glaciation, comes within a few feet of Daly's mathematical estimate of the amount of water removed from the ocean and locked up in ice fields.

Since then there have been several fluctuations above and below present sea level, but the most pertinent is a strand line shown by marine fossils to be about 4000 years old. It absolutely corroborates Dr. Matthes' theory about Sierra glaciers. The ocean at that time was about 25 ft. higher than it is now. This means that 4000 years ago there were 655,000 cubic miles of water in the oceans that are now locked up on land in the form of glacial ice. Since Sierra glaciers at present are barely holding their own, and

several have disappeared in recent years, we can be certain that there was no ice in California 4000 years ago.

So if we can eventually connect observed glacial changes with climate fluctuations, evaluate them quantitatively and check with related observations, such as changes in ocean level, we shall have achieved a method of long-range climate prediction. Such predictions would not be for months or even for years, but for centuries. If the Palisade Glacier Survey contributes any useful data toward this end, no matter how small, it will be worthwhile.

I wish to express my thanks to Messrs. John D. Bascom, Pasadena engineer; Oliver Kehrlein, of San Francisco, writer and member of the Committee on Glaciers, American Geophysical Union; and Albert S. Marshall, artist, of Three Rivers, California, for the vigorous part they took in the Survey. Also gratitude is due to Mr. L. E. Holmes, manager of Glacier Lodge, for putting the upper lodge at the disposal of the Survey party free of cost. This made it possible to carry on the work during a period of cold, stormy weather. I greatly appreciate the assistance, financial and otherwise, of Mrs. Philip Dana Orcutt and Mr. Joel Ellis Fisher, trustees of the American Alpine Club Research Fund. Without their full cooperation, of course, there would have been no Palisade Glacier Survey.

WELDON F. HEALD

4. ALASKAN GLACIER STUDIES, 1946

Realizing that I was to be in Alaska for the St. Elias Expedition during the first half of the summer, William O. Field, Jr., of the American Geographical Society, suggested that, if time and circumstance should permit, I make an effort to continue some of the glacier studies which we had pursued together on his expedition to the Panhandle of Southeastern Alaska in the summer of 1941. With a grant from the American Geographical Society, another from the American Alpine Club Research Fund, and a guarantee of material aid from the United States Forest Service, William Latady (a geology student from Harvard) and myself (interested in these studies for a Master's Thesis at Columbia University) made preparations to spend a month and a half in the field during August and September. Our itinerary was a tight one; and, as I reflect on the matter now, I am amazed that we actually accomplished all we had planned.

Beginning at Icy Bay, where we came out from the St. Elias Range early in August, we started a survey which was to end at the Stikine River in mid-September. During the interim, over 1500 miles of rugged coast were covered by boat, by foot, and by air. The result: observations on over 80 glaciers, including transit surveys on eleven ice fronts, ground photographic surveys on 32, and aerial pictures of at least 70 of those seen. A number of new survey stations were set up this year as well, all of which should be useful for later comparative investigation.

The glaciers in Icy Bay, of course, were observed by foot and by air, our ground notes being the first obtained in about 50 years. A transit was carried into the field here, but repeated bad weather bogged down all efforts, and we had to remain satisfied with the photographic record made in June. Two later flights over the Malaspina, and the Guyot and Tyndall Glacier fronts, completed an up-to-date sequence of summer observations here. The glaciers in upper Yakutat Bay, including Disenchantment Bay, Nunatak Fiord, and Russell Fiord, were studied by using a 50-ft. Libby-McNeil fishing boat generously loaned to us for a week by Mr. Sorensen, the superintendent of the cannery in Yakutat. Wayne Axelson, the skipper of this vessel, was most skillful and co-operative in taking us right up to the ice fronts and landing us on the various capes and vantage points chosen for stations. Here Turner, Hubbard and Nunatak Glaciers were triangulated, and photo stations set up at Hidden and Fourth Glaciers.

On August 14th we flew south to Juneau, taking aerial shots en route of some of the glaciers on the W. side of the Fairweather Range. Covering the ice in Glacier Bay by boat and by plane took another week of intense effort. Thanks to the consideration of Mr. Douglas Brown, of Meriden, Conn., who gave us passage on his chartered boat during his exploration of the far reaches of Glacier Bay, we reoccupied quite a number of our 1941 ground stations and returned to Juneau with new data on the Muir, McBride, Plateau, Grand Pacific, Ferris, Margerie, Lamplugh and Johns Hopkins Glaciers, as well as aerial records of most of the other ice fronts in Muir Inlet, Reid Arm and Reid Inlet.

WEST RIM OF TAKU GLACIER FRONT

Since 1941 ice has plowed through mature forest in a quarter-of-a-mile advance

Photo, M. M. Miller

HOLE-IN-WALL GLACIER, ON THE TAKU RIVER EAST OF JUNEAU

This glacier has advanced a quarter of a mile and thickened considerably since 1941. All the 1941 survey stations have been covered over by the advance

Photo, M. M. Miller

Next we accomplished four days of transit work on the Taku River glaciers E. of Juneau. Here triangulations of Taku, Hole-in-Wall, and the East and West Twin Glaciers were performed, and photo records were made of the other important fronts: Norris, Wright and Talsekwe Glaciers. This same district, including the Juneau ice-cap and the interesting glaciers around Devil's Paw on the upper Taku, was photographed carefully from the air. Before going any farther south, I made a late afternoon flight up into the Chilkat country W. of Haines and made the first aerial photographic record of the 15 spectacular and beautiful glaciers of the Takhin and Tsirku River Valleys. This permitted me to view the extensive snowfields of the Muir Glacier system and to see a country veritably "standing on end" in its ruggedness between the Tsirku and Lynn Canal. Of especial interest here were the broad lobate termini of the de Blondeau, Takhin and Bertha Glaciers and the amazing shrinkage on the Tsirku Glacier itself. In addition, unusual annular banding was observed on several minor tongues. Lynn Canal glaciers were photographed on the return flight.

On September 1st, after two bad stretches of rain, we headed south to Petersburg at the beginning of what was to be two weeks of unbroken sunshine, most helpful to our plans. On this flight we succeeded in getting aerials of a number of glaciers hitherto unphotographed, and also some valuable information to be of use in the ground survey we were hoping to conduct in this same area. From Petersburg ten days were spent, working from Forest Service boats, studying changes in the glaciers of Thomas Bay, Frederick Sound and LeConte Bay, where new information was gained from triangulations of the Baird, Patterson and LeConte Glaciers. Again a photo record was made on these, as well as new observations on an unnamed tongue 12 miles up Muddy River from Brown Cove. Two flights were made from Petersburg, the second being for the purpose of covering the ice of the lower Stikine River and the Thomas Bay district, and of photographing the high plateau around Devil's Thumb and Kate's Needle. Chartering a fishing boat to take us back to Juneau, we were able

FEEDER LOBE OF BAIRD GLACIER
A typical example of Alaskan annular banding
Photo, M. M. Miller

HUBBARD GLACIER FRONT
Triangulation in 1946 shows that it is in approximately the position determined by the last survey, conducted by the National Geographic Society in 1909
Photo, M. M. Miller

on the way north to complete surveys of the glaciers in Holkham Bay, particularly of the Dawes Glaciers at the head of Endicott Arm. Time and bad ice conditions prevented entry into Tracy Arm, and we returned to Juneau on September 13th, just in time to catch a Canadian Pacific steamer south. Having already made aerial observations and photographs on the two Brown and the two Sawyer Glaciers, we considered this last mission complete.

My plan had been to gain at least a cursory view of what has been going on in the advance and recession of all southeastern Alaskan glaciers during the past few decades. So little work has been done on the subject that any such collection of data is of extreme value and interest. The regional aspect of the problem is definitely of import, and resolutions of the results we and other investigators have obtained may well be useful indices of climatic change over all of North America. Our notes have not been edited as yet, our maps have not been made, nor our conclusions synthesized, but certain patent facts may be presented here. There seems to be a general retreat of ice fronts throughout southeast Alaska; however, strangely enough, some of the larger ice streams are behaving unconformably. The Guyot Glacier has shown great recession, opening up between 10 and 15 miles of Icy Bay since 1888. One hundred miles down the coast, the Hubbard Glacier, with its four-mile-wide front in Yakutat Bay, seems to be in approximately the same position as in 1909; apparently it has been "holding its own," so to speak, for 37 years. Another 100 miles to the southeast, the Muir front has shrunk from its once magnificent size to a width of less than a mile and, since 1941 alone, has receded a mile and three-quarters, or a total of 12 miles since 1903. On the other hand, an additional 100 miles farther southeast, we found the great Taku Glacier not stagnant, not retreating, but advancing, with its distributary, Hole-in-Wall Glacier. Both of them exhibited a most amazing surge since our last visit in 1941. The Hole-in-Wall Glacier has come forward and covered all the survey stations we set up five years ago, advancing from a quarter to a half a mile in this time and thickening considerably. Since the turn of the century, Taku has come forward no less than three miles and is at present pushing through mature forests. Observations on the Baird Glacier, still another hundred miles S. of Taku, showed this year that it is beginning to recede, after having reached, in 1935, its maximum position in centuries. From

such startling facts, coupled with the new record which we are now able to construct, we find that our regional problem is indeed a complex one, but hardly the less fascinating.

The discovery of two sites of interglacial forest remains; finding nine glaciers showing interesting banding structures, at least three of which we believe definitely to be Forbes banding (the first reported in Alaska); gaining new data on vertical shrinkage; photographing many new ice masses; and, in general, the scope and fascination of the investigation brought to the summer's field work delights above and beyond the normal pleasures to be derived from grand scenery and adventurous travel. Here indeed mountaineering, exploration and science meet on common ground.

MAYNARD M. MILLER

5. REPORT OF THE TREASURER, A.A.C. RESEARCH FUND

November 1, 1945 to October 31, 1946

Research Fund: Balance, November 1, 1945		$ 125.00
(consisting of contributions, $100 and $25)		
Receipts:		
Contributions, $100 and $100		200.00
Profit on sale of 50 Corning Glass Works (carried for benefit of Research Fund)		530.86
Proceeds, sales of *Bibliography of American Mountain Ascents*		75.00
		$ 930.86
Disbursements:		
Grant to Maynard M. Miller, Alaskan Glacier Studies	$ 200.00	
Grant to Weldon F. Heald, Survey of Palisade Glacier	275.00	
		$ 475.00
Balance, October 31, 1946		$ 455.86
(carried in American Alpine Club funds with Chase National Bank, New York City)		

(Studies on Forbes dirt bands in the Alps and publication of *Bibliography of American Mountain Ascents* contributed to the Fund)

Respectfully submitted,

JOEL E. FISHER

American Alpine Club Annals

J. Monroe Thorington

2. Members Elected After December 1902 and Prior to 1 January 1912

The first decade of the Club's existence resulted in climbing records differing regionally and technically from those of the Founding Members. Fewer candidates entered with polar qualification, and emphasis on single great peaks such as Orizaba, Mt. St. Elias, Mt. McKinley and Huascaran, shifted to more widespread, often exploratory, mountaineering. New work was accomplished particularly in the Selkirks, and extensive lists of ascents in the Alps appear for the first time.

HENRY SHERMAN ADAMS

(1909)

Born at Wethersfield, Conn., August 1st, 1864. Son of Thomas Griswold and Lucy Stillman (Dickinson) Adams. A descendant of early settlers in Connecticut. Unmarried.

Educated in public and private schools of Wethersfield and Hartford.

Editor of *The Spur*.

Home: New York City. (*Who's Who in the East.*)

Visited Chamonix in the '80s.

1903. Canadian Rockies: Mt. Stephen, Mt. Lefroy.

GEORGE HUNT BARTON

(1906, resigned 1920)

Born at Sudbury, Mass., July 8th, 1852. Son of George Washington and Mary S. (Hunt) Barton. Married Eva May Beede, September 18th, 1884.

Lived on a farm at Sudbury until 21 years old. Mass. Institute of Technology (S.B., 1880).

Assistant in drawing, Mass. Institute of Technology, 1880-81. Assistant in the Hawaiian government survey, Honolulu, 1881-83, during which he explored the islands. Assistant in geology, 1883-84; assistant professor until 1904, Mass. Institute of Technology.

Also at Boston U. until 1904. Lecturer on geology at Boston U., 1915, and at Wellesley, 1921-22.

Assistant geologist, U. S. Geological Survey. 1885, visited Newfoundland and Labrador in the *Arethusa.* Member of Peary's sixth expedition to Greenland, 1896.

Director of Teachers' School of Science, Boston. President of Appalachian Mountain Club, 1903-04. Fellow, Geological Society of America. Member of Arctic Club of America and Harvard Travellers Club.

Author of *Outline of Elementary Lithology,* 1900; *Outline of Dynamical and Structural Geology;* also many geological papers.

Home: Cambridge, Mass. Died November 25th, 1933. (*Who Was Who.*)

1881. Mauna Loa.
1882. Haleakala.
1896. Mt. Ekinga.
1904. Haleakala.

MORRISON PARSONS BRIDGLAND
(1903)

Born at Fairbanks, Ontario, December 20th, 1878. Married Mary Elizabeth Perkins, January 8th, 1908.

West Toronto High School (now Humberside Collegiate). U. of Toronto (B.A., 1908).

Appointed assistant to A. O. Wheeler (q.v.), Dominion Land Survey, at Calgary, 1902, and remained with him until 1910 while engaged in photo-topographical surveys in the Canadian Rockies adjacent to the Canadian Pacific Railway. He has regarded his mountaineering as secondary to this work.

An original member of the Alpine Club of Canada (vice-president, 1908-11). In charge of mountaineering at early camps (see H. G. Wheeler). Mt. Bridgland, in the Canadian Rockies, is named for him.

Author (with E. Deville) of *Description and Guide of Jasper Park,* 1917.

Home: Toronto. (Portrait, *C. A. J.* xxvi, facing p. 90.)

1902. Selkirks: Ursus Major Mtn. (1st ascent): Ursus Minor Mtn. (1st ascent); Bagheera Mtn. (1st ascent); Rogers Pk., Mt.

Oliver (1st ascent); Clarke Pk. (1st ascent); Mt. Swanzy, Pollux Pk., Mt. Abbott, Mt. Fox, Mt. Selwyn, Beaver Overlook (1st ascent).

1903. Canadian Rockies: Fairview Mt., Sheol (1st ascent); Eiffel Pk., Mt. Bident, Boom Mt. (1st ascent); Pulpit Pk., Bow Pk., Observation Pk., Cirque Pk., Mt. Bosworth (1st ascent); with H. G. Wheeler (q.v.): Mt. Niblock, Mt. Hector, July 28th; Mt. Gordon, August 10th; Mt. Thompson, August 12th; Mt. Temple, September 1st; Mt. Daly, September 5th; Mt. Aberdeen, September 15th.

1904. Canadian Rockies: Mt. Whymper, Vermilion Pk., Mt. Oke (1st ascent); Misko Mtn. (1st ascent); Mt. Owen, Park Mt. (1st ascent); Mt. Yukness (1st ascent); Mt. Dennis, Mt. Field, Mt. Burgess, Michael Pk., Mt. Kerr, Mt. McArthur; with H. G. Wheeler: Molar Mtn. (1st ascent), July 9th; Storm Mt., Mt. Niles, August 5th; Mt. Wapta, August 15th; Mt. Balfour, August 24th; Mt. Carnarvon (1st ascent), September 9th; Mt. Stephen, September 17th; Mt. Des Poilus, October 6th; Mt. King, October 7th.

1905. Canadian Rockies: Vermilion Pk., Mt. Wapta, Kiwetinok Pk., Mt. Collie, Mt. Duchesnay (1st ascent); Mt. Vaux, Mt. Hunter (1st ascent).

1906. Canadian Rockies: Ptarmigan Pk. (1st ascent); Mt. Redoubt (1st ascent); Fossil Mtn. (1st ascent); Oyster Pk. (1st ascent); Michael Pk., Mt. Wapta, The President, The Vice-President, Ogre Pk. (1st ascent); Mt. Sealion (1st ascent); Amiskwi Pk. (1st ascent); Mt. Sharp (1st ascent); Helmet Mtn. (1st ascent); Zinc Mt. (1st ascent).

1907. Canadian Rockies: Mt. Temple, Mt. Aberdeen. Also, survey work in sections where peaks were unnamed.

1908. Selkirks: Rogers Pk., Hermit Mtn., Pollux Pk., Leda Pk.

1909. Canadian Rockies: Mt. Huber, Wiwaxy Pk., Mt. Burgess, Mt. Des Poilus, Mt. McArthur.

1910. Selkirks: Mt. Mackenzie, Mt. Cartier, Mt. Sproat, Mt. Carnes (1st ascent). Monashee (Gold) Range: Mt. Copeland (1st ascent); Mt. Begbie, Griffin Mt., Mabel Mt.

1911. Canadian Rockies and Selkirks: Cascade Mtn., Storm Mtn. Mt. Bonney, N. Albert Pk., Mt. Mackenzie, Incomappleux

Mt. Monashee Range: Mt. Copeland, Mt. Begbie, Griffin Mt., Mabel Mt.

1912. Selkirks: Mt. Bonney, N. Albert Pk., Mt. Carnes, Cornice Mt., Mt. Mackenzie. Monashee Range: Mt. Begbie, Griffin Mt., Mabel Mt.

1913. Canadian Rockies: Beehive Mt. (1st ascent); Gould Dome (1st ascent); Pigeon Pk. and minor summits in N. part of Crowsnest Forest Reserve.

1914. Canadian Rockies: Cascade Mtn., Storm Mtn., Bonnet Mtn. (1st ascent); Mt. Lougheed, Fatigue Mt., Mt. McArthur, Mt. King. Also, Sofa Mt. and peaks in S. part of Crowsnest Forest Reserve.

1915. Canadian Rockies: Thunderbolt Pk. (1st ascent); Mt. Clitheroe (1st ascent); Mt. Maccarib (1st ascent); Chak Pk. (1st ascent); Aquila Mtn. (1st ascent); Mt. Tekarra (1st ascent); Excelsior Mt. (1st ascent); Roche Bonhomme, Roche De Smet, Roche Miette, Roche Ronde, Mt. Aeolus, Mt. Utopia.

1918: Canadian Rockies: Mt. Prow (1st ascent); Unnamed 10,189′ (1st ascent); Wapiti Mtn. (1st ascent); other unnamed peaks near Red Deer and Panther Rivers.

1919. Canadian Rockies: Wampum Pk. (1st ascent); Mt. Malloch, Smoky Mt. (1st ascent); Unnamed 10,189′ (1st ascent); Mt. Harris (1st ascent); other peaks along Clearwater River.

1920. Canadian Rockies: Bonnet Mtn., Block Mtn. (1st ascent).

1921. Low unnamed peaks in vicinity of Pitt Lake, near Vancouver.

1922. Canadian Rockies: Mt. Verendrye (1st ascent); other peaks in southern part of Kootenay Park.

1924. Canadian Rockies: Conical Pk. (1st ascent); Unnamed 9379′ (1st ascent;) Mt. Siffleur (1st ascent); other peaks along Saskatchewan Valley to N.

1927. Canadian Rockies: Mt. Wilson, Mt. Coleman, Unnamed 10,054′ (S.E. of Sunset Pass; 1st ascent); Unnamed 10,054′ (N.E. of Waterfowl Lakes; 1st ascent); Unnamed 9947′ (N. of Nigel Pass; 1st ascent).

1928. Canadian Rockies: Nigel Pk., Sunwapta Pk., Dalhousie Mt. (1st ascent); Unnamed 9717′ (forks of Brazeau River; 1st

ascent); Unnamed 10,224′ (S.W. of Brazeau forks; 1st ascent); Unnamed 10,264′ (E. of Job Pass; 1st ascent).

1930. Subdivision work in Northern Alberta.

Wrote for *C. A. J.*: 'Jasper Park' (x, 70); (with A. O. Wheeler, q.v.): 'The Application of Photography to the Mapping of the Canadian Rocky Mountains' (xi, 176); 'Some Trails between Banff and Nordegg' (xviii, 50).

ERNEST WILLIAM BROWN

(1907, V. P. 1920-22, d. m. 1938)

Born at Hull, England, November 29th, 1866. Son of William and Emma (Martin) Brown. Unmarried.

Christ's College, Cambridge, 1887 (fellow, 1889-95, hon. fellow, 1911; M.A., 1891; Sc.D., 1897). Yale (hon. A.M., 1907). Sc.D. (Adelaide U., 1914; Yale, 1933; Columbia, 1934). McGill (LL.D., 1935).

Professor of mathematics, Haverford, 1891-1907; Yale, 1907-32. F. R. S. Awarded Bruce medal, 1920. Member of the American Academy of Arts and Sciences, National Academy of Sciences (Watson medal, 1937), American Astronomical Society (vice-president, 1923-25; president, 1928-31).

Author of *Treatise on the Lunar Theory,* 1896; *A New Theory of the Moon's Motion,* 1897-1905; *Tables of the Motion of the Moon,* 1920; *Planetary Theory,* 1933.

Home: New Haven, Conn. Died July, 1938. (*Who Was Who; Early American Ascents,* 79.)

1888. Wellenkuppe, Wetterhorn.
1899. Matterhorn, Furggenjoch, Col de Miage.
1890. Zinal Rothhorn, Jungfrau (traverse).
1894. Wellenkuppe, Aig. des Petits Charmoz.
1899. Rimpfischhorn, Obergabelhorn, Monte Rosa.

ALLSTON BURR

(1906, T. 1911-19)

Born at Newton, Mass., July 3rd, 1866. Son of Isaac Tucker and Ann Francis (Hudson) Burr. Married Elizabeth Jenks Randolph, June 11th, 1898.

Harvard (A.B., 1889; hon. A.M., 1931).

With Thompson-Houston Electric Co., Boston, 1889-93. Treasurer of United Electric Securities Co., 1893-98. Member of firm of Perry, Coffin & Burr, securities, 1898-1916. Now director of Coffin & Burr, Inc.

Chairman, Boston chapter, American Red Cross, 1916-21, now director (honorary, 1945). Overseer, Harvard, 1931-37. On council of Radcliffe College.

Member of the Alpine Club (London), British, Canadian, French and Swiss Alpine Clubs, Appalachian, Adirondack and Green Mountain Clubs. Represented the Alpine Club at the fiftieth anniversary dinner of the Appalachian Mountain Club (1926).

Home: Chestnut Hill, Mass. (*Who's Who.*)

Canadian Rockies and Selkirks: Mt. Stephen, Mt. Victoria, Mt. Lefroy, Mt. Sir Donald.

Prior to 1908. Croda da Lago (traverse) and Becco di Mezzodi; Comelle and Rosetta Pass (Cencenighe to San Martino); Punta della Madonna, Jungfrau, Rimpfischhorn, Weisshorn, Alphubeljoch (Zermatt to Saas Fee); Zinal Rothhorn, Dent Blanche, Matterhorn, Mont Blanc (Grands Mulets to Courmayeur via Glacier du Dôme); Col du Géant (Courmayeur to Chamonix); Aig. des Gds. Charmoz (traverse).

1908. Mittelhorn (Gleckstein Hut to Rosenlaui); Finsteraarhorn (Schwarzegg Hut to Finsteraarhorn Hut); Klein Fiescherhorn, Gross Fiescherhorn and Walcherhorn (Finsteraarhorn Hut to Eismeer Station); Schreckhorn (traverse, S.-N.W., from Schwarzegg Hut and back); Jungfrau, Mönch and Eiger (traverse; Bergli Hut to Kleine Scheidegg); Südlenzspitze, Nadelhorn, Hohberghorn (traverse from Mischabel Hut to Dom Hut); Théodulhorn (from Zermatt); Wellenkuppe and Obergabelhorn (traverse, N.-S.; Trift Hotel to Zermatt); Aig. Rouges (traverse of three peaks, S.-N., from Arolla); Aig. de la Za (traverse, W.-E., from Arolla); Pas de Chèvres, Col de Seilon (Arolla to Fionnay).

1911. Brèche de la Meije, Les Écrins (traverse from Carrelet Hut down N.E. arête to La Bérarde); Meije (traverse Grand Pic and Pic Central from Promontoire to La Grave); Col de la Tour Ronde and Aig. du Géant (from bivouac on Brenva Glacier to Courmayeur); Mont Blanc (traverse from bivouac on Brenva Glacier to Cabane du Dôme); Punta di Ceresole and Grand Paradis

(traverse; Herbetet Hut to Valsavaranche); Grivola (traverse; Valsavaranche to Cogne); Grand Combin (traverse; Valsorey Hut to Bourg St. Pierre); Petit Dru and Grand Dru (traverse from Charpoua Hut); Aig. de Grépon (traverse); Monte Rosa (Nordend, Dufourspitze, from Bétemps Hut); Dom and Täschhorn (Dom Hut to Täsch Alp); Matterhorn (Zmutt arête; Schönbühl Hut to Breuil); Furggjoch (or Breuiljoch) from Breuil to Zermatt.

1921. Dent du Midi (Haute Cime; Bonaveau to Champéry via Anthémoz Lakes); Le Buet and Belvédere (Pierre à Bérard to Chamonix); from Pavillon Tête Rousse: Aig du Goûter, Dome du Goûter (to Vallot Hut and Chamonix); Grands Mulets to Vallot Hut, with Aig. Wilson on return; Mont Blanc (traverse from Grands Mulets via Bosses du Dromadaire, Petits Mulets and the variation of the Ancien Passage between the parallel ridges of the Rochers Rouges to Chamonix); Wetterhorn (from Gleckstein Hut); Jungfrau (Rotthal Hut to Jungfraujoch); Rötihorn, Simelihorn and Faulhorn (Grindelwald to Schynige Platte); Tchuggen (traverse); Piz Rosegg (from Tschierva Hut); Piz Kesch (Madulein to Bergün); Piz Bernina (traverse; Tschierva Hut to Boval Hut via Biancograt).

1923. Titlis and traverse of Reissend Nollen (Trübsee Hotel to Engelberg); Klein Spannort (traverse) and Gross Spannort (Spannort Hut to Erstfeld); Tödi (Hüfi Hut to Linthal); Uri-Rothstock (Biwald to Engelberg); Balmhorn (Wildelsigen Hut to Schwarenbach and Kandersteg); Bietschhorn (traverse, N. and W. ridges; Bietschhorn Hut to Goppenstein); Morgenhorn, Weisse Frau, Blümlisalphorn and Oeschinenhorn (Blümlisalphorn to Kandersteg); Lauteraarhorn (from Strahlegg Pass, descending N.W. arête); Breithorn (Mutthorn Hut to Stechelberg); Jungfrau (Guggi Hut to Jungfraujoch); Schwarzhorn (traverse) and Faulhorn.

1925. Oldenhorn (traverse by N. and E. arêtes) and Diablerets (Diablerets Hut to Gsteig); Lobhörner (traverse of its five peaks; Lauterbrunnen to Zweilütschinen); Gspaltenhorn (from Büttlassenlücke) and Büttlassen (traverse, S.-N. Gspaltenhorn Hut to Mürren); Aletschhorn (from Concordia Hut, via Aletschfirn and return); Grüneckhorn and Gross Grünhorn (Concordia Hut to Jungfraujoch).

1927. Weissmies (traverse; Weissmies Hut to Zwischenberg Pass and Saas Fee); Allalinhorn (traverse; Britannia Hut and Allalin Pass to Saas Fee); Joderhorn (from Monte Moro Pass); Strahlhorn (traverse from Mattmark via Schwarzberg-Weissthor to Saas Fee); Ritter Pass (from Binn and return); Ofenhorn and Hohsandhorn (from Binn and return); Silvretta Pass, Piz Buin and Fuorcla Buin (Silvretta House to Guarda); Piz Palü, Bellavista and Piz Zupò (Diavolezza to Morteratsch); Piz Julier (from Val Julier, down by the path); Wetterhorn (traverse from Gleckstein Hut; up by Hühnergutz Glacier and N.E. ridge; down by Sattel to Grindelwald); Eiger (Mittellegi Hut to Kleine Scheidegg).

1929. Piz Corvatsch (from Fuorcla Surlej and return, alone); Piz Alv (from col between it and Piz Minor and return, alone); Piz d'Arlas and Piz Cambrena (from Diavolezza; traverse of both up N.W. ridge and down to Vadret Pers); Il Chapütshin, La Muongia, Piz Glüschaint (from Coaz Hut and back; traverse from N. of Il Chapütschin to E. of Piz Glüschaint); Ringelspitz (from Fidaz and back).

1931. Crasta Spinas (W.-E.) and Las Trais Fluors (W.E.).

1933. Piz Morteratsch (Tschierva Hut to Boval Hut); Piz d'Aela (Aela Hut to Bergün; down between Rugnux dador and Rugnux dadains); Crastagüzza (from Boval Hut; up E., down W. arête).

1935. Sustenhorn (from Steinalp).

1937. Jungfrau (from Joch and return).

1940. (Aet. 74.) Canadian Rockies: Mt. Temple.

Wrote for *App.:* 'Some Climbs in the Bernese Oberland in 1908' (xi, 1); 'Climbs in the Pennine Alps in 1908' (xii, 237); 'Mont Blanc by the Brenva Route' (xiii, 39); 'Mont Blanc Again' (xv, 237); 'George Leigh Mallory' (xviii, 1); 'Third Mount Everest Expedition' (xviii, 5), 'The Jungfrau from the North' (xviii, 16).

FREDERIC KING BUTTERS

(1910, d. m. 1945)

Born at Minneapolis, Minn., February 8th, 1878. Son of William and Ella Susan (King) Butters. Unmarried. The family name was originally Butter; his ancestors came from Scotland, settling at Woburn, Mass., prior to 1665.

U. of Minn. (B.Sc., 1899). Harvard (B.A., 1900). Phi Beta Kappa, Sigma Xi.

Instructor in botany and pharmacognosy, U. of Minn., 1901-10; assistant professor, 1910-19; associate professor, 1919-34; professor, 1934-.

Member of the Alpine Club of Canada (1913) and American Geographical Society, F.R.G.S., Fellow, American Association for the Advancement of Science. Member of Botanical Society of America, Ecological Society of America and American Fern Society.

Author of *Trees and Shrubs of Minnesota; A Monograph on the Genus Heuchera.*

Home: Minneapolis. Died August 1st, 1945. (*Who's Who in Minnesota; American Men of Science;* In Memoriam with portrait, *A. A. J.* vi, 150, by J. M. Thorington.)

1904. Vancouver Island: Mt. Edinburgh (two ascents; with E. W. D. Holway, q.v.). Canadian Rockies: With E. W. D. Holway: Mt. Temple, Yoho Pk., Mt. Stephen; Dennis, Duchesnay and Abbot Passes in one day from Field to Lake Louise.

1905. Canadian Rockies: From Moraine Lake over Consolation Pass to Boom Lake; Vermilion Pass and part way up Prospectors Valley; return to Bow River and Lake Louise (three days; with E. W. D. Holway).

1906. Canadian Rockies and Selkirks: With E. W. D. Holway: Crossed Asulkan Pass to Fish Greek; made partial ascent of Mt. Fox. Later visited Bear Creek and also went up Beaver Valley as far as base of Mt. Macoun. Following this they went E. by rail and visited Ice River Valley.

1907. Canadian Rockies and Selkirks: With E. W. D. Holway: Prospectors Valley from Moraine Lake via Wenkchemna Pass to Kaufmann Lake and Misko Pass. Lake McArthur, July 18th; Abbot Pass to Lake Louise, July 19th. With E. W. D. Holway: Prairie Hills, Rogers Pk., August 24th. Then returned to the Rockies and ascended Yoho Pk.

1908. Selkirks: Mt. Sir Donald (with E. W. D. Holway); with E. W. D. Holway and H. Palmer (q.v.): Mt. Fox, July 30th; Mt. Donkin (from W.), August 2nd; Mt. Selwyn (traverse), August 4th; Cyprian Pk. (1st ascent), August 12th; Mt. Wheeler (2nd ascent; new route), August 14th.

1909. Mt. Rainier (guideless; with E. W. D. Holway). Selkirks: With E. W. D. Holway and H. Palmer: Mt. Kilpatrick (1st ascent), July 18th; Mt. Dawson (from S.), July 21st; Augustine Pk. (1st ascent), July 23rd; Mt. Purity and first crossing of Purity Range, August 6th; Terminal Pk., August 9th; Mt. Tupper.

1910. Selkirks: Mt. Sifton (guideless); with E. W. D. Holway and H. Palmer: Guardsman Mtn. (1st ascent), July 12th; The Footstool (1st ascent), July 12th; Alpina Dome (1st ascent), July 18th; Pioneer Pk. (The Gothics; 1st ascent), July 21st; Mt. Topham (1st ascent), August 6th.

1911. Selkirks: Uto Pk. (traverse); with E. W. D. Holway and H. Palmer: Citadel Mtn. (1st ascent), June 16th; Belvedere Pk. (1st ascent), June 20th; Goldstream Pk. (1st ascent), July 15th; Mt. Redan (1st ascent), July 17th; Austerity Mtn. (1st ascent), July 20th; Mt. Holway (1st ascent), August 7th; Sorcerer Mtn. (3rd ascent; new route), August 14th.

1912. Selkirks: Swiss Pk., Mt. Swanzy (with H. Palmer).

1913. Selkirks: Mt. MacDonald (with E. W. D. Holway); several ascents of Eagle Pk. and Avalanche Mtn. In this and earlier years he had made fifteen traverses of Asulkan Pass, eight of Donkin Pass and four of Illecillewaet névé; all guideless.

1914: Selkirks: With E. W. D. Holway and A. J. Gilmour: Mt. Duncan (2nd ascent); Mt. Sugarloaf (N. summit; 2nd ascent); Unnamed 10,500 ft. in Battle Range (1st ascent).

1915. Selkirks: Mt. Sir Donald (N.W. arête); with H. Palmer: Mt. Smart (1st traverse); Mt. Bonney.

1920. Selkirks: Hermit Mtn.

1924. Selkirks (with L. I. Smith): Mt. Sir Donald, Mt. Tupper, Mt. Selwyn (from Glacier Circle).

1931. Canadian Rockies (with L. I. Smith): Mt. Victoria, Mt. Lefroy.

1933. Longs Pk. (traverse; guideless, with L. I. Smith.)

1941. Mt. Ypsilon (with L. I. Smith.)

Wrote for *C. A. J.*: 'The Flora of the Glacier District' (xxi, 139). Also, 'The Vegetation of the Selkirk Mountains' for H. Palmer's *Mountaineering and Exploration in the Selkirk Range*, 1914.

JOHN H. CAMERON
(1905, resigned 1913)

No biographical information. He was a banker, connected with the Hamilton National Bank, Chicago.

Member of the Mazamas (1905-10); third vice-president, 1905-06.

Home: Chicago, Ill.

Recorded but undated ascents are: Canadian Rockies and Selkirks: Mt. Temple, Mitre Col, Abbot Pass, Mt. Victoria. Mt. Avalanche, Mt. Sir Donald.

1905. Mt. Hood (twice in three days, from Cloud Cap Inn), July 15th and 17th; Mt. Rainier (with C. E. Fay, C. E. Rusk, C. H. Sholes, q.v.), July 25th-26th.

1908. Canadian Rockies: In August, he made a serious attempt to ascend Mt. Victoria by the N.W. arête, attaining a point within 200 ft. of the summit. A 20-ft. pinnacle stood in the party's way; they had not enough rope and were compelled by wind and storm to return.

Wrote for *App.:* 'An Attempt on Mt. Victoria by its North-West Arête' (xii, 192); for *Mazama:* 'Shall American Climbers adopt European Methods' (ii, 216).

GEORGE G. CANTWELL
(1905, resigned 1910)

No biographical information. At Dawson in Klondike days. An expert photographer, his photo of Mt. Baker being the last ever taken of its volcanic activity.

He appears to have been a partner in the photographic firm of Bart and Cantwell, which existed in Everett, Wash., in 1903.

Cantwell station, on the Alaska Railroad, and Cantwell River are *not* named for him.

Home: Everett, Wash.

Recorded ascents are: Mt. Rainier and

1903. Mt. Baker (new route on E. side; with C. E. Rusk, q.v.), September 3rd. This was the seventh recorded ascent (*Rusk,* 124, 135); see also note in *Mazama* (iii, 20). [Rusk was not always reliable, sometimes thinking he had made new ascents when

others had been over the same routes before him. That this route on the E. side of Mt. Baker was new, cannot be confirmed by Mt. Baker Club records, which are quite complete.]

Wrote: 'An Ascent of Mt. Baker,' illustrated by his own photographs (*Outing,* August 1904).

BENJAMIN SAYRE COMSTOCK

(1908, resigned 1935)

Born at New York, N. Y., on the present site of Macy's store, June 13th, 1859. Son of George Wells and Lydia (Sayre) Comstock. Married Adelaide Adams, 1889.

Educated by tutors and in schools at Vevey, Switzerland, and Wiesbaden, Germany. Princeton, 1880.

For many years head of Comstock Manufacturing Co. A director of 3-in-1 Oil Co. He retired after World War I and, in 1925, went to Princeton to live.

Died at Trenton, N. J., September 27th, 1941. (*Early American Ascents,* 78; In Memoriam, *A. A. J.* iv, 481, by J. M. Thorington.)

1873. (Aet. 15.) Piz Corvatsch.

1880. Tschingel Pass.

1887. Dent du Midi, Gross Venediger, Kesselwandjoch, Weisskugel.

1890. Selkirks: Avalanche Mtn. (guideless). Guideless attempts on Mt. Sir Donald and Rogers Pk.

1890-91. Canadian Rockies: Minor climbs around Lake Louise.

1900. Canadian Rockies: Mt. Stephen, Mt. Aberdeen, Eiffel Pk. (2nd ascent, alone), Mt. Victoria. Minor climbs around Glacier Lake and Mt. Forbes (an area which he was one of the first tourists to visit).

1901. Selkirks: Mt. Dawson (2nd ascent), July 16th.

1907. Selkirks: Castor, Pollux.

1908. Selkirks: To Gold River, in attempt to reach Mt. Sir Sandford (with H. Palmer, q.v.).

1909. Selkirks: To N. base of Mt. Sir Sandford (with H. Palmer, H. C. Parker). Mt. Stockmer (1st ascent; with H. Palmer), June 21st.

1909. Blümlisalp, Tête Blanche, Untergabelhorn, Rimpfischhorn, Col de Bertol, Col d'Hérens.

1917. Canadian Rockies: Mt. Odaray (lower summit, alone).

1919. Canadian Rockies: Mt. Vice President, Mt. Wapta.

1921. Canadian Rockies: Mt. Temple, Mt. Odaray.

1922. Königspitze, Furggjoch.

1928. (Aet. 69.) Pet. Dent de Veisivi, Aig. du Moine, Aig. du Tour.

1929. Canadian Rockies: Went on the long packtrain journey to Mt. Sir Alexander (with A. J. Gilmour, F. N. Waterman, N. D. Waffl, Miss H. I. Buck).

EDWIN BINGHAM COPELAND

(1909, resigned 1913)

Born at Monroe, Wis., September 30th, 1873. Son of Herbert Edson and Alice (Bingham) Copeland. Married Ethel Faulkner, December 19th, 1900.

U. of Wis., 1894. Stanford U. (A.B., 1895). Studied at Leipzig, 1895-96. Halle (Ph.D., 1896).

At U. of Wis., 1896-98, and U. of Chicago, 1900-01. Assistant professor of botany, U. of Ind., 1897-98; Cal. State Normal School, 1899; U. of W. Va., 1899-1900; professor, 1900-01. Instructor in botany, Stanford U., 1901-03.

Botanist, Philippine Government, 1903-08. Superintendent, school of agriculture, Los Baños, 1908-09; dean and professor of plant physiology, 1909-17. Manager of herbarium, U. of Cal., 1928-32. Professor, biological laboratory, Cold Spring Harbor, 1901. Technical adviser (plant industry), Philippine Government, 1932.

Author of *The Coconut; Rice; Natural Conduct,* 1928; *Genera Filicum.*

Home: Berkeley, Cal. (*American Men of Science.*)

1899. Diamond Mesa, August 8th; Junction Pk. (1st ascent), August 8th.

1903. Mt. Shasta (two ascents; one of them in 3 h. 10 m.); Mt. Eddy (several ascents). Also, at unspecified times: Mt. Whitney, University Pk., Mt. Stanford, Mt. Brewer.

Philippines: Apo, Pulog, Matutum, Bulusan.

1915. Mt. Rainier (alone; Gibraltar route in one day from Paradise).

CHARLES ROBERT CROSS, JR.

(1909, d. m. 1915)

Born at Boston, Mass., June 17th, 1881. Son of Charles Robert and Mariana (Pike) Cross. His Scotch ancestor, Robert Cross, settled at Ipswich, Mass., about 1635. His father was an original member of the Appalachian Mountain Club (1876). C. R. C., Jr., was unmarried.

Noble and Greenough School, Boston. Harvard (A.B., 1903; LL.B., 1906). He then took a year's work at Mass. Institute of Technology (where his father was professor of physics), intending to make a specialty of patent law, but never carried out this plan, entering the general law office of Boyden, Palfrey, Bradley and Twombley, in Boston, and remaining until the summer of 1913.

An accomplished pianist, and a student of art and architecture.

During four summers of his college course he climbed in the Alps. In 1913 he went for several months on a hunting trip to Alaska, and to the Canadian Rockies in the spring of 1914. During the autumns of 1911, 1912, 1913, he hunted caribou in Newfoundland. Mt. Cross (Lat. 54°05′, Long. 120°) in the Canadian Rockies, is named for him.

In January 1915, he went to France to work for the Allied cause. For a few weeks he drove in the American Ambulance Service at Dunkirk, then joining the American Sanitary Commission to fight typhus in Serbia, assisting the commission for several months as executive secretary, one month being spent in Montenegro. In July 1915, he returned to Paris and joined the American Distributing Service in handling supplies for military hospitals throughout France. As a result of injuries received by the overturning of an automobile, he died at Military Hospital No. 46, Dinard, France, October 8th, 1915. He was the only member of his Harvard class to lose his life in actual war service. (Harvard, Class of 1903, Quindecennial Report, 1920; his portrait forms the frontispiece; *Harvard Dead in the War Against Germany,* i, 58.)

1900-03. Four seasons in the Alps during which he ascended: Monte Rosa (Grenz Glacier); Dom, Weisshorn, Obergabelhorn

(traverse); Zinal Rothhorn (1st ascent of S. arête); Rimpfischhorn, Mont Blanc, Aig. du Grépon.

1907. Hunted Dall sheep on Kenai peninsula, his record head and other trophies being in the Harvard Club, Boston. In this and other years, including his first four years after leaving law school, he hunted in the Northwest, visiting the upper Stikine and Mackenzie headwaters. In 1913 he studied sheep in the vicinity of Lake Babine, B. C. In the summer of 1914 he joined S. Prescott Fay (A. A. C., 1912) in an expedition for the Biological Survey and Dept. of Agriculture, Washington, D. C., hunting and collecting in the Canadian Rockies as far north as Mt. Sir Alexander.

REST FENNER CURTIS

(1905, d. m. 1918)

Born at Marion, Ala., November 24th, 1850. Son of Thomas and Annie (Fenner) Curtis. Unmarried.

Boston Latin School, U. of Lewisburg, Pa., and private tutor. Harvard (A.B., 1870).

After graduating taught at East Weymouth, Mass., Newport, R. I., Framingham, Mass., and Boston. In 1882 he became a teacher in Chauncy Hall School; 1884, head of mathematics department; 1891, associate principal; 1896, Hale School, Boston; principal, 1897. In 1904 he became vice-president of the New England College of Languages, and head of the mathematics department in the allied Steinert Hall Preparatory School.

Member of the Appalachian Mountain Club (1876; first corresponding secretary, 1880; recording secretary, 1881-83; vice-president, 1888, 1898, 1909; president, 1889). Curtis Peak, in the Canadian Rocky Mountains, is named for him.

Home: Brookline, Mass. Died March 9th, 1918. (Harvard, Class of 1870, tenth report, 1920; In Memoriam, *App.* xiv, 288; for portrait see A. A. C. dinner photo, 1909; *A. A. J.* v, 174).

1894. Selkirks: Eagle Pk., Mt. Abbott (2nd ascent); Mt. Lookout (all with C. E. Fay, q.v.).

1898. Canadian Rockies: Abbot Pass (1st crossing); Mt. Balfour (attempt from Sherbrooke Valley; both with C. E. Fay).

1906. Selkirks: Represented Appalachian Mountain Club at first camp of Alpine Club of Canada (Rogers Pass).

Wrote for *App.*: 'Mount Abbott' (vii, 292); 'The Making of Abbot Pass' (ix, 31).

EDMUND BURKE DELABARRE

(1908, resigned 1932)

Born at Dover, Me., September 25th, 1863. Son of Edward and Maria (Hassell) Delabarre. Married Dorothea Esther Cotton, March 14th, 1907.

Student at Brown U., 1882-83. Amherst (A.B., 1886). Harvard (A.M., 1889). U. of Freiburg (Ph.D., 1891). Phi Beta Kappa, Sigma Xi.

Associate Professor of psychology, 1891-96; professor, 1896-1932, Brown U.; then professor emeritus. Director of the psychological laboratory, Harvard, 1896-97, during absence of Prof. Münsterberg.

Fellow, American Association for the Advancement of Science and American Academy of Arts and Sciences. Member of the American Psychological Society and Rhode Island Historical Society.

Corresponding member of the Geographical Society. Explored Northern Labrador during the Brown-Harvard expedition to Navchak, 1900-02, and wrote the report of the expedition.

For his deciphering of inscriptions on Dighton Rock in Taunton River, attributed to Miguel Cortereal, a Portuguese explorer of 1511, the Portuguese government decorated him with the Military Order of St. James of the Sword.

Author of *Ueber Bewegungsempfindungen*, 1891; *Dighton Rock History*, 1916; *Inscribed Rocks in Narragansett Bay*, 1919-23; *Dighton Rock—A Study of the Written Rocks of New England*, 1928.

Home: Providence, R. I. Died March 16th, 1945. (*Who's Who.*)

His recorded ascents, the dates of which are not known, are: Breithorn, and, in Labrador, Mt. Faunce.

Wrote for *B. G. S. P.*: 'Report of the Brown-Harvard Expedition to Navchak, Labrador, in the year 1900' (iii, 65).

LEWIS LIVINGSTON DELAFIELD

(1911, C. 1914-16, V. P. 1917-19, P. 1920-22, d. m. 1944)

Born at New York, N. J., January 30th, 1863. Son of Lewis L. and Emily (Prime) Delafield. Married Charlotte Hoffman Wyeth, April 25th, 1885.

Educated in private schools in Switzerland and at St. Paul's School, Concord, N. H. Studied at law schools of Harvard and Columbia (LL.B., 1884).

Admitted to the New York bar, 1884, and later to Federal courts and U. S. Supreme Court. Senior member of Hawkins, Delafield and Longfellow until his retirement in 1934. Member of the Committee of 70 of 1894. Secretary of the Rapid Transit Commission, 1894-99. Nominated for justice of New York Supreme Court, 1906. During 1917-18 was on the district board for appeals on draft matters. Past vice-president of the New York State Bar Association. Director of the City Bank Farmers Trust Co.

For several years prior to the discovery of the North Pole he was counsel for the Peary Arctic Club, and took an active part in the arrangements for Peary's expeditions.

Home: New York City. Died November 27th, 1944. (*Who's Who;* In Memoriam, with portrait, *A. A. J.* v, 405, by Palmer.)

From boyhood his principal recreations were trout fishing and quail shooting; not until 1907 (aet. 44) did he start mountaineering in Switzerland, his ascents including Zinal Rothhorn, Rimpfischhorn, Lyskamm and various peaks of the Bernina.

1911. Canadian Rockies: Pika Pk. (1st ascent); Mt. Richardson (1st ascent).

Other ascents in Canadian Rockies and Selkirks until 1914.

AUGUST SEVERIN EGGERS

(1903, d. m. 1936)

Born at Koginseberg, Norway, December 30th, 1862.

U. of Christiania (M.D., 1889). Came to America in 1890 and practiced for a short time in Sioux City, Ia., and then in Grand Forks, N. D., where he spent the remainder of his life. For many years lecturer at U. of N. D. President of the N. D. State Medical Association, 1897. Fellow, American Academy of Surgeons.

Member of the Alpine Club of Canada (1914), being awarded its badge at the Lake O'Hara camp of 1925.

Home: Grand Forks, N. D. Died October 7th, 1936. (*J. A. M. A.*, vol. 107, 2067; In Memoriam, *A. A. J.* iii, 95, by J. M. Thorington; *C. A. J.* xxiv, 113, by A. A. McCoubrey.)

1901. Selkirks: Grizzly Mtn. (1st ascent).

1902. Selkirks: Mt. Dawson (3rd ascent), September 4th.

1903. Canadian Rockies: Mt. Lefroy, Mt. Sarbach (2nd ascent; alone); Mt. Deltaform (1st ascent; with H. C. Parker, q.v.), September 1st; Mt. Biddle (1st ascent; same party), September 3d.

1904. Canadian Rockies: Mt. Odaray (2nd ascent); Mt. Stephen (traverse from Lake O'Hara to Field).

1909. Canadian Rockies: Mt. Goodsir (attempt on S. summit).

1914. Canadian Rockies: Mt. Marpole, Mt. Balfour.

1920. Canadian Rockies and Selkirks: Mt. Aberdeen, Mt. Temple. Mt. Sir Donald; traverse of Leda, Castor Pollux, Dome, Rampart, Afton.

1921. Canadian Rockies and Selkirks: Mt. Whyte. Uto Pk. (from Uto-Sir Donald col).

FRANK W. FREEBORN

(1908, C. 1911-13, d. m. 1919)

Born at Warren, R. I., 1847. Unmarried.

Brown U. (1869), following his graduation by travel in Europe, Palestine and Egypt.

Taught Latin and French in various American high schools, being 20 years in Boston, and somewhat longer in Brooklyn.

Member of the Appalachian Mountain Club (corresponding secretary), and the Alpine Club of Canada. An expert mountain photographer.

Died at Warren, R. I., June 21st, 1919. (In Memoriam, with portrait, *C. A. J.* x, 94, by W. E. Stone and A. O. Wheeler.)

In 1891 he ascended Breithorn, but after his first visit to the Rockies spent almost every summer in the Canadian mountains.

1905. Selkirks: First visit to Glacier House.

1906. (Aet. 59.) Canadian Rockies and Selkirks: Mt. Temple, July 28th; Mt. Victoria, July 30th. At Glacier, where he became

an original member of the Alpine Club of Canada. Rogers Pk., August 9th.

1907. Canadian Rockies and Selkirks: Paradise Valley camp. Mt. Aberdeen, July 6th; Mt. Stephen, July 20th. Mt. Sir Donald, July 26th.

1909. Mt. Hood. Selkirks: Avalanche Mtn.

1911. Canadian Rockies: With W. E. Stone: Mt. Lefroy (attempt), July 11th; Mt. Temple, during a trip across Sentinel and Mitre Passes; Mt. Lefroy, July 17th.

1912. Canadian Rockies: Storm Mtn.

1913. Canadian Rockies: Cathedral camp. Eiffel Pk. Then went to Mt. Robson area. Mumm Pk. (with W. E. Stone).

1914. (Aet. 67.) Canadian Rockies: Suffered a hemiplegia while photographing on the slopes of Mt. Field.

Wrote for *App.: Some Adirondack Paths* (v, 222; vi, 51; xii, 231; also issued as a special publication); 'Two Camps in the Canadian Rockies' (xi, 325); 'Fourth Annual Camp of the Alpine Club of Canada' (xii, 156); 'Three Climbs in the Canadian Alps' (xii, 195); for *C. A. J.*: 'A Day on Mt. Sir Donald' (i, 211); 'On Mt. Hood' (ii, No. 2, 88).

CHARLES ALLYN GILCHRIST

(1908, d. m. 1920)

Born at Philadelphia, Pa., August 4th, 1873. Son of William Wallace and Susan (Beaman) Gilchrist. His father was a founder of the Philadelphia Orchestra. C. A. G. was unmarried.

U. of Pa. (B.S., 1893); postgraduate studies in chemistry.

Instructor in mechanical drawing, Phila. N. E. Manual Training School, 1893; 1894-1900 teacher of constructive drawing and science. 1900-02, photography. 1902, civil engineer, Fairchild and Gilchrist. Later connected with the Bureau of Navigation and the Civil Service Commission, Manila, P. I.

Member of the Geographical Society of Philadelphia. Spent much time in travel. An expert photographer, and in 1912 he presented a group of his prints of Alpine and other scenes to the A. A. C.

Home: Philadelphia. Died in California, May 20th, 1920. (U. of Pa., Class of '93, Record to 1930.)

Recorded but undated ascents (prior to 1906) are: Matterhorn, Breithorn, Strahlegg Pass. Mt. Shasta (alone); Mt. Hood.

1907. Popocatepetl, Ixtaccihuatl.

1909. Philippines: Mt. Maquiling.

1910. Himalayas: Guicha La (16,400 ft.). Philippines: Santo Tomas (8600 ft.); Taal Volcano, Banahao (7000 ft.).

Wrote for *App.*: 'Climbs on Popocatepetl and Ixtaccihuatl' (xi, 197); for *B. G. S. P.*: 'Recent Ascent of Ixtaccihuatl' (v, 141); 'Recent Volcanic Eruptions in the Philippines' (ix, 103); 'Manila, 1912' (x, 167); 'With Camera in the Cascades' (xv, 161); also, 'Exploring the Philippine Forests' (*Collier's*, December 1910).

DORA KEEN HANDY

(1907)

Born at Philadelphia, Pa., June 24th, 1871. Daughter of William Williams and Emma (Borden) Keen. Her father, a distinguished surgeon, served in the Civil War. D. K. married George W. Handy (A. A. C., 1912), 1916.

Case and Hallowell School, Philadelphia. Bryn Mawr, 1888-92; 1893-96.

1896-1907, engaged in public school improvement, as secretary to the Public Education Association of Philadelphia, and in other civic work.

Made a world tour with her father, June 1901-Oct. 1902, and in 1907-08 spent a year and a half in Europe and North Africa. 1908-09, accompanied the party of Gen. (then Col.) Gorgas to the first Pan-American Scientific Congress in Chile, returning to the U. S. by way of Paris.

At present in life insurance business.

F. R. G. S. Corresponding member of the Appalachian Mountain Club.

Home: West Hartford, Vt.

1899. Zugspitze (from Partenkirchen; descent by Schneekar); Monte Cristallo.

1906. Canadian Rockies and Selkirks: Abbott Pass. Eagle Pk., Mt. Abbott, Mt. Afton.

1908. Aig. du Midi.

1909. Argentine: Santa Maria Falsa (16,000 ft.; alone from Punta del Inca). Riffelhorn (S.); Untergabelhorn, Wellenkuppe,

Zinal Rothhorn, Rimpfischhorn (Langenfluh Glacier); Monte Rosa, Breithorn, Kl. Matterhorn, Weisshorn, Matterhorn.

1910. Aig. de la Glière, Aig. des Petits Charmoz, Aig. de l'M, Mont Blanc (Chamonix to Courmayeur); Aig. du Géant, Aig. des Gds. Charmoz, Col des Grands Montets and Petite Aig. Verte, Dent du Requin.

1911. Kenai peninsula: Mt. Cooper. First expedition to Mt. Blackburn (when Copper River Railroad was completed), via Kennecott Glacier. [Miss Keen was the first woman to climb in Alaska.]

1912. Mt. Blackburn (1st ascent; with G. W. Handy), May 19th, the expedition having spent 33 days on ice and snow from 2000 ft. to the summit. Also made two attempts on Mt. Rainier from Spray Park, the highest point reached being 9500 ft.

1913. Scolai Mtns.

1914. Explored Harvard Glacier to its source (with G. W. Handy); also College and Harriman fjords.

1925. Mt. Katmai.

Wrote for *App.:* 'First Expedition to Mt. Blackburn (xii, 327); 'Exploration of Harvard Glacier' (xiii, 393; also in *Harper's,* cxxxii, 113); for *B. G. S. P.:* 'First Expedition to Mt. Blackburn' (x, 172); 'Studying the Alaska Glaciers' (xiii, 72); for *Mazama:* 'First Exploration of an Alaskan Glacier' (iv, 38); for *Mountaineer:* 'A New Route up Mt. Rainier' (v, 37). Also, 'Climbing the Giant's Tooth,' *Scribner's,* lx, 247).

EDWARD WARREN HARNDEN
(1907)

Born at Boston, Mass., April 25th, 1865. Son of Charles W. and Monica (King) Harnden. Married Alice M. Goldthwait, April 25th, 1906.

High School, Somerville, Mass., and Northeastern Law School, family problems preventing his entering Harvard in 1883.

Law and legislative reporter, and member of Mass. bar.

Member of Appalachian and Colorado Mountain Clubs, Sierra Club, Mountaineers, Alpine Club of Canada, and Estes Park Chamber of Commerce.

Home: Boston, Mass.

Recorded but undated ascents are: Finsteraarhorn, Jungfrau, Gr. Fiescherhorn, Hinter Fiescherhorn.

Mt. Rainier (from S. and from N.E.); climbs in Tatoosh Range; Mt. Baker, Mt. Hood, Mt. Adams, Mt. St. Helens, Glacier Pk., Mt. Shuksan.

Mt. Lyell, Rafferty Pk. (1st ascent); Tuolumne Canyon.

Mt. Olympus (three peaks).

Middle Teton.

1911. Purcells: Mt. Nelson (2nd ascent; new route); Mt. Toby (1st ascent); Mt. Catherine (1st ascent); Mt. Monica (1st ascent).

1913. Purcells: Mt. Sir Charles (1st ascent); Jumbo Mtn. (attempt; summit plateau being attained in bad weather).

1914. Alaska: Studied coast glaciers, especially at Prince William Sound and Copper River.

1914. Purcells: Eyebrow Pk. (1st ascent).

1922-35. Snowmass Pk., Maroon Pks., Holy Cross Mtn., Crestone Pk., Crestone Needle, Pyramid Pk., Hunkydory, Longs Pk., Stewart Pk., San Luis Pk., Mt. Elbert, McHenry Pk., Hagerman Pk., Windom Mtn., Aztec Pk., Mt. Eolus, Hagues Pk. Travel in Gore Range (1935).

Wrote for *App.:* 'A Western Mountaineering Summer' (xii, 213); 'Climbs in the Southern Selkirks' (xii, 350); 'The Call of Colorado' (xvi, 158); for *C. A. J.:* 'First Ascents in the Southern Selkirks' [Purcells] (iv, 98); 'Exploration in the Southern Selkirks' (vi, 103); 'The Upper Columbia Valley' (vi, 240); for *Mountaineer:* 'The Lure of the West' (ii, 25); 'A New Mountain Country' (iii, 9); 'Camps and Climbs in the Selkirks' (vii, 76); 'A Mountaineer in Colorado' (xv, 47); for *S. C. B.:* 'Indian Pictographs in Pote Valley' (vi, 258); for *Trail and Timberline:* 'Worth While Things' (lvii, 1); 'Why I come to Colorado' (lxxxv, 5); 'The Hagerman Climb' (cxx, 12); 'A Post-Outing Trip' (clxix, 160).

JAMES CHALMERS HERDMAN

(1905, d. m. 1910)

Born in Pictou Co., N. S., 1856. Married.

After receiving the degree of D.D., he came to Alberta in 1885, and for nearly 20 years was pastor of Knox Church, Calgary. He

resigned to become superintendent of Presbyterian Missions for Alberta and eastern British Columbia.

An original member of the Alpine Club of Canada, which he assisted to organize, becoming its first Western vice-president (1906-07). One of the few Canadians who had taken part in mountaineering prior to the formation of that Club. In his ascent of Mt. Hector he used a massive ice-axe made by a Calgary blacksmith. On the summit of Mt. MacDonald he found a rusty spike in a water-filled hole in a rock, evidence of an ascent during the railroad construction days. His last season in the mountains was at the 1907 camp in Paradise Valley.

Died June 7th, 1910, and was buried at Banff. (In Memoriam, with portrait, *C. A. J.* ii, No. 2, 185, by A. O. Wheeler.)

1902. Selkirks: Mt. Macoun (1st ascent).

1903. Canadian Rockies and Selkirks: Mt. Hector, Mt. Lefroy. Mt. MacDonald (2nd ascent).

1904. Selkirks: Hermit Mtn. (1st ascent), August 4th.

1907. Gold Range: Mt. Begbie (1st ascent), June 11th.

Wrote for *C. A. J.*: 'The Ascent of Mt. Macoun' (i, 104).

JOSEPH WILLIAM ANDREW HICKSON
(1910)

Born at Montreal, July 7th, 1873. Son of Sir Joseph and Catherine (Dow) Hickson. Unmarried.

McGill U.; postgraduate study at Freiburg, Berlin and Halle.

Professor of metaphysics and logic, McGill U., 1909-24.

Member of the Alpine Club (London), Canadian (president, 1924-25) and Swiss Alpine Clubs. Represented the Alpine Club of Canada at the fiftieth anniversary dinner of the Appalachian Mountain Club, 1926. Editor of the *Canadian Alpine Journal,* 1928-29.

Home: Montreal. (*Who's Who.*)

1900. Jungfrau, Wetterhorn.

1905. Canadian Rockies and Selkirks: Mt. Stephen (from Lake O'Hara); Mt. Temple. Rogers Pk., Swiss Pk. (traverse).

1907. Canadian Rockies and Selkirks: Mt. Lefroy. Castor, Pollux, Mt. McGill (1st ascent).

1909. Canadian Rockies and Selkirks: Mt. Victoria, Mitre Pk., Mt. Fay, Mt. Deltaform, Pinnacle Mt. (1st ascent), July 29th; Ptarmigan Pk. (1st ascent). Mt. Sir Donald.

1910. Canadian Rockies and Selkirks: Mt. Assiniboine (N.W. side); Mt. Hungabee, Mt. Quadra (1st ascent); Mt. St. Bride (1st ascent), July 12th. Mt. Tupper.

1911. Eiger, Schreckhorn, Aig. de l'M, Aig. des Petits Charmoz, Aig. des Gds. Charmoz, Aig. du Géant, Dent du Requin, Aig. du Grépon (traverse). Had a narrow escape through falling into a crevasse at the base of Mt. Collon, July 31st.

1913. Canadian Rockies: Mt. Biddle, Chephren Pk. (E. summit; 1st ascent); Mt. Stephen (from field).

1914. Cinque Torri (two peaks); Croda da Lago.

1915. Canadian Rockies and Selkirks: Mt. President, Mt. Vice-President, Mt. Goodsir (S. tower; traverse, S.W.-N.W.). Mt. Sir Donald (N.W. arête); attempt on Mt. Moloch.

1916. Selkirks and Purcells: Uto Pk. (S. arête); The Camels (1st ascent). Explorations in N. fork of Bugaboo Creek (Howser Spire; to final tower).

1917. Canadian Rockies and Selkirks: Pinnacle Mt. (from Paradise Valley). Mt. Moloch (1st ascent).

1919. Canadian Rockies: Mt. Douglas (1st ascent; from Palliser Pass); Mt. Beatty, Mt. Joffre (1st ascent); Mt. Assiniboine (traverse).

1920. Canadian Rockies: Mt. Forbes (2nd ascent); Mt. Athabaska.

1921. Canadian Rockies and Selkirks: Mt. Louis, Mt. Fifi (1st ascent); Peak 2, Peak 3, Peak 5, Peak 6 (of Ten Peaks; from Prospectors Valley). Hermit Mtn., Terminal Pk.

1922. Aig. du Moine, Aigs. des Belvédère and Persévérance, Mont Blanc, Wellenkuppe, Obergabelhorn, Matterhorn, Lyskamm, Monte Rosa.

1923. Canadian Rockies: Mt. Spring-Rice (1st ascent); Mt. Rhondda (1st ascent); Cathedral Crags.

1924. Canadian Rockies: With H. Palmer (q.v.): Little Alberta (1st ascent), August 21st; Mt. King Edward (1st ascent), August 22nd. Mt. Edith Cavell (1st complete traverse by E. ridge).

1925. Canadian Rockies: Bastion Pk. (1st ascent; with H. Palmer), August 12th; Devils Head (1st ascent).

1926. Canadian Rockies: With H. Palmer: Mt. Fryatt (1st ascent), July 10th; Mt. Lapensée (1st ascent), July 14th; Peak A (1st ascent), July 18th; Throne Mtn. (1st ascent), July 26th. Castle Mtn. (1st ascent of S.E. tower by E. face).

1927. Mönch, Matterhorn (traverse).

1928. Canadian Rockies: Mt. Mangin (1st ascent); Mt. Nivelle (1st ascent); Mt. Robertson (1st ascent).

1930. (Aet. 57.) Canadian Rockies: Cataract Pk. and Unnamed (10,200 ft.) in Pipestone Valley (1st ascents); Unnamed (10,150 ft.) on N.W. side of Drummond Glacier (1st ascent); Mt. Pulsatilla (1st ascent); Unnamed (10,200 ft.), W. side of Bonnet Glacier (1st ascent).

Wrote for *A. A. J.*: 'Travel and Ascents South of Banff' (i, 1; the first article of the *American Alpine Journal*); 'Psychological Aspects of Mountaineering' (i, 259); 'Mountaineering and Mysticism' (v, 14); for *A. J.*: 'The Columbia Group and Round Bow Pass and Lake Louise' (*36*, 199); for *App.*: 'Some Climbs in the Rockies in 1910' (xii, 226); 'Mountaineering in the Canadian Alps' (xvi, 230); for *C. A. J.*: 'The Ascent of Pinnacle Mtn., and Second Ascent of Mt. Deltaform' (ii, No. 2, 95); 'Two First Ascents in the Rockies' [St. Bride, Quadra] (iii, 40); 'A Mountaineering Experience near Arolla' (iv, 117); 'Concerning Mt. Moloch' (viii, 127); 'The Ascent of Mt. Moloch' (ix, 17); 'A Mountaineering Trip to the British and French Military and Assiniboine Groups; 1919' (xi, 9); 'A Visit to the Saskatchewan Valley and Mt. Forbes' (xii, 26); 'Around the Saskatchewan' (xiv, 1); 'The Mt. Logan Expedition' (xv, 1); 'Ascents in the Canadian Rockies, 1926' (xvi, 44); 'The British and French Military Groups Revisited' (xvii, 28); 'New Climbs in the Canadian Rockies in 1930' (xix, 33); 'The Disaster on Nanga Parbat' (xxii, 37); 'The Second American Expedition to K2' (xxvii, 128).

EDWARD WILLET DORLAND HOLWAY

(1910, d. m. 1923)

Born at Adrian, Mich., February 13th, 1853. At the age of one year he was taken by his parents to the frontier settlements of N.E. Iowa. There he lived for 50 years, becoming a successful banker

at Decorah. Married (1) Effie Ellen Aiken, May 1876; (2) Mary Ellen Mortenson, December 12th, 1918.

Botany was his avocation and he became an acknowledged authority on the rust fungi. In 1904, after retiring, he moved to Minnesota and became assistant professor of botany at the U. of Minn.

His interest in mountaineering was aroused by a visit to Switzerland and two short vacations in the Canadian Rockies (1901 and 1902). Although almost 50 when his climbing career began, it is doubtful whether he was equalled by any amateur in the Selkirk Range, particularly in route-finding. Mt. Holway, in the Selkirks, is named for him, and the "Holway Room" in the botany building, U. of Minn., contains his books.

Died at Phoenix, Ariz., March 31st, 1923. In accordance with his expressed desire, his ashes were scattered in the Asulkan Valley. (In Memoriam, with portrait, *C. A. J.* xiii, 253, by F. K. Butters; H. Palmer, *E. W. D. Holway, A Pioneer in the Selkirks,* 1931.)

Prior to 1901. Breithorn and minor peaks of Zermatt.

1901. Canadian Rockies and Selkirks: Mt. Victoria. Excursions at Glacier.

1902. Canadian Rockies: His pedestrian power in his fiftieth year is shown by his activity in six consecutive days: (1) From Lake Louise over Abbot Pass to Lake O'Hara, Cataract Brook to Hector, train to Lake Louise. (2) Camped above Moraine Lake. (3) Mt. Temple, descending to Paradise Valley and Lake Louise. (4) To foot of Mt. Hector. (5) Mt. Hector (new route from S.), returning to Lake Louise. (6) Started at 6.00 A.M. and walked around Mt. Temple.

1903. Nevado de Toluca.

1904. Vancouver Island: Mt. Edinburgh (two ascents; with F. K. Butters, q.v.). Canadian Rockies: With F. K. Butters: Mt. Temple, Yoho Pk., Mt. Stephen; then crossed Dennis, Duchesnay and Abbot Passes in one day from Field to Lake Louise.

1905. Canadian Rockies: From Moraine Lake over Consolation Pass to Boom Lake; Vermilion Pass and part way up Prospectors Valley; return to Bow River and Lake Louise (three days; with F. K. Butters).

1906. Canadian Rockies and Selkirks: With F. K. Butters: Crossed Asulkan Pass to Fish Creek; made partial ascent of Mt.

Fox. Later visited Bear Creek and also went up Beaver Valley as far as base of Mt. Macoun. Following this they went E. by rail and visited Ice River Valley.

1907. Canadian Rockies and Selkirks: With F. K. Butters: Prospectors Valley from Moraine Lake via Wenkchemna Pass to Kaufmann Lake and Misko Pass. Eiffel Pk. (alone), July 13th. Lake MacArthur, July 18th; Abbot Pass to Lake Louise, July 19th. With F. K. Butters: Prairie Hills, Rogers Pk., August 24th. Then returned to the Rockies and ascended Yoho Pk.

1908. Selkirks: Mt. Sir Donald (with F. K. Butters); with F. K. Butters and H. Palmer (q.v.): Mt. Fox, July 30th; Mt. Donkin (from W.), August 2nd; Mt. Selwyn (traverse), August 4th; Cyprian Pk. (1st ascent), August 12th; Mt. Wheeler (2nd ascent; new route), August 14th.

1909. Mt. Rainier (guideless; with F. K. Butters, q.v.). Selkirks: With F. K. Butters and H. Palmer: Mt. Kilpatrick (1st ascent), July 18th; Mt. Dawson (from S.), July 21st; Augustine Pk. (1st ascent), July 23rd; Mt. Purity and first crossing of Purity Range, August 6th; Terminal Pk., August 9th; Mt. Tupper.

1910. Selkirks: With F. K. Butters and H. Palmer: Guardsman Mtn. (1st ascent), July 12th; The Footstool (1st ascent), July 12th; Alpina Dome (1st ascent), July 18th; Pioneer Pk. (The Gothics; 1st ascent), July 21st; Mt. Topham (1st ascent), August 6th; Mt. Macoun, August 8th; with H. Palmer: Grand Mtn. (1st ascent), August 18th; Mt. Sugarloaf (1st ascent of N. and highest summit; alone), September 13th.

1911. Selkirks: With F. K. Butters and H. Palmer: Citadel Mtn. (1st ascent), June 16th; Belvedere Pk. (1st ascent; June 20th; Goldstream Pk. (1st ascent), July 15th; Mt. Redan (1st ascent), July 17th; Vidette Pk. (alone), July 19th; Austerity Mtn. (1st ascent), July 20th; Mt. Holway (1st ascent), August 7th; Sorcerer Mtn. (3rd ascent; new route), August 14th; with H. Palmer: Leda Pk., Castor Pk., Pollux Pk., Rampart.

1912. Canadian Rockies and Selkirks: With H. Palmer: Mt. Sir Sandford (1st ascent), June 24th; Adamant Mtn. (1st ascent), June 26th. The Mitre.

1913. Selkirks: Mt. Swanzy, June 27th; again, June 29th; Mt. Moloch (attempt); Avalanche Mtn. (alone); Uto Pk. (alone); Mt. MacDonald (with F. K. Butters), August 12th; Rogers Pk.

(alone; ascent 5.5 h. from Glacier House); Mt. Beaver (1st ascent), August 25th; Mt. Duncan (1st ascent), August 25th.

1914. Selkirks: Rogers Pk., Swiss Pks. (traverse); Mt. Bonney (traverse across Mt. Green); with F. K. Butters and A. J. Gilmour: Mt. Duncan (2nd ascent); Mt. Sugarloaf (N. summit; 2nd ascent); Unnamed 10,500 ft. in Battle Range (1st ascent). In this and earlier years he had made twelve traverses of Asulkan Pass and nine of Donkin Pass.

1915. Canadian Rockies: With A. J. Gilmour and B. F. Seaver: a 16-day trip on N. side of Mt. Robson; Mumm Pk.; with A. J. Gilmour: Mt. Edith Cavell (1st ascent); August 5th; then explored Mt. Longstaff area; attempt on Mt. Longstaff and first ascents of adjacent points: 9400 ft., 9800 ft.

1916. Canadian Rockies: With A. J. Gilmour and H. Palmer: Mt. Longstaff (1st ascent), July 27th; Mt. Phillips (2nd ascent; new route), August 1st; Unnamed 9300 ft. (1st ascent), August 5th. Cariboo Range: With A. J. Gilmour: Unnamed 10,075 ft. and Unnamed 10,000 ft. (1st ascents), during first expedition into this range, August 12th-26th.

1918. (Aet. 65.) Selkirks: Pollux Pk., July 9th; Pollux Pk. and Mt. Swanzy, August 1st.

1920-21-22. Botanical expeditions in Brazil and other parts of South America.

Wrote for *C. A. J.*: 'Beyond the Asulkan' (ii, No. 1, 37); 'Further beyond the Asulkan Pass' (ii, No. 2, 70); 'Mt. Sugarloaf: A Solitary Glacier Climb' (iii, 80); 'First Ascents of Mts. Beaver and Duncan' (vi, 99); 'First Ascent of Mt. Edith Cavell and Explorations in the Mt. Longstaff Region' (vii, 63); 'The Cariboo Mountains' (viii, 30); 'New Light on Mts. Brown and Hooker' (ix, 45).

THOMAS JOHNSTON HOMER

(1910, d. m. 1937)

Born at Roxbury, Mass., July 18th, 1858. Son of Thomas Johnston and Mary Elizabeth (Fisher) Homer. Married Ella Louise Stowell in 1897.

Roxbury Latin School. Harvard (A.B., 1879; LL.B., 1882).

Admitted to Suffolk bar and U. S. Circuit Court, 1883. Member of Massachusetts Bar Association.

Law and literary work. Library of Congress, 1904-07, engaged in compilation and cataloguing of serial publications.

In Europe, 1878; California and Alaska, 1879; Mexico, 1895. By 1890 his chief avocation was canoeing, and he became familiar with many rivers of the eastern U. S. In 1892 he continued this in Quebec and New Brunswick. In 1926, while touring the British Isles, he descended the river Wye by canoe.

Home: Boston. Died December 20th, 1937. (Harvard College, Class of 1879, 9th report, 1929; *Early American Ascents,* 73.)

1878. Monte Rosa; Théodule Pass.
1879. Mt. Shasta to 13,000 ft.
1895. Popocatepetl (to crater).

After 1913 his climbing was in the White and Green Mountains with his sons. Wrote 'The Daunting Terrible White Mountains' (*New England Mag.,* March 1911).

JAMES SATHER HUTCHINSON
(1905)

Born at San Francisco, Cal., December 18th, 1867. Son of James Sloan and Coralie Dernihart (Pearsol) Hutchinson. Married Eleanor Upton Averell, September 12th, 1906.

Mission Grammar School and Boys' High School, San Francisco. Harvard (A.B., 1896; attended law school, 1896-97). U. of Cal. (LL.B., Hastings Coll. of Law, 1899).

Six years in banking business, San Francisco. Attorney. In 1899 entered law firm of Joseph Hutchinson and Frank Otis in San Francisco.

Charter member of Sierra Club (hon. member). Member of Sierra Ski Club. Editor of Sierra Club Bulletin, 1903-04, 1925. Hutchinson Meadow, in the Sierra Nevada, is named for him.

Home: San Francisco, Cal. (Harvard, Class of 1897, 6th report, 1922.)

Recorded but undated ascents are: Mt. Rainier, Mt. Hood, Mt Shasta.

1896. Mt. Goddard, July 1st.
1898. Tower Pk., Seven Gables, June 29th.
1899. Matterhorn Pk., July 28th.

1902. Red-and-White Pk. (1st ascent), July 18th.

1903. With J. N. LeConte (q.v.): Marion Pk., July 22nd; Mt. Sill (1st ascent), July 24th; North Palisade (1st ascent), July 25th.

1904. Mt. Humphreys (1st ascent), July 18th.

1908. With J. N. LeConte and D. McDuffie (A. A. C., 1927) Mt. Mills (1st ascent), July 10th; Mt. Abbott (1st ascent), July 13th.

1909. Mt. Stanford, July 27th.

1911. Seven Gables (with J. N. LeConte).

1912. Diving Board (1st ascent; with J. N. LeConte), July 26th.

1913. Mt. King, July 7th.

1920. Triple Divide Pk. (1st ascent); Black Kaweah (1st ascent), August 11th.

Wrote for *S. C. B.:* 'Round about Mt. Dana' (iii, 319); 'First Ascent of Mt. Humphreys' (v, 153); 'Colby Pass and Black Kaweah' (xi, 118); 'A New Link in the John Muir Trail: Palisade Creek—Mather Pass' (xi, 357); 'Goddard and Disappearing Creeks: The Enchanted Gorge' (xii, 7); 'Helen Marion Gompertz LeConte' (xii, 148).

FRANK BRUCE LELAND

(1905, resigned 1913)

Born on a farm at Rose, Mich. Married Baroness Hedessa von Daun Wickett.

Educated in district schools. U. of Mich. (A.B., 1882; LL.B., 1884).

Began practice of law in Flint, Mich., in 1885, but in 1890 went to Detroit where, after five years in private practice, he became general counsel and later general manager of the National Loan and Investment Co. President, United Savings Bank of Detroit, which he organized in 1901. Regent of U. of Mich., 1907-24.

Conspicuous in establishing and directing organizations on the scientific care and treatment of tuberculosis. A student of archeology, with field work in Greece, Asia Minor and Egypt.

Home: Detroit, Mich. Died July 12th, 1926. (*Who's Who,* 1916 edit.; *Michigan Alumnus,* with portrait, May 27th, 1927.)

His recorded but undated ascents, made prior to 1905, were: Mont Blanc, Orizaba, Mt. Rainier (July 22nd, 1905), Mt. Hood (twice; one was on July 19th, 1901), Mt. Stephen, Mt. Sir Donald.

In *Mazama* ii, No. 4, there are quotations from an article about Mt. Rainier written September 14th, 1905, for the *Detroit Journal.*

WILLIAM LIBBEY

(1908, d. m. 1927)

Born at Jersey City, N. J., March 27th, 1855. Son of William and Elizabeth (Marsh) Libbey. Married Mary E. Green, December 7th, 1880.

Princeton (A.B., 1877; A.M., Sc.D., 1879).

Assistant professor of physical geography, 1882, histology, 1883-98, physical geography and director of the museum of geology and archeology, 1883-84, Princeton; then emeritus professor. President, Princeton Savings Bank; vice-president, First National Bank.

Co. L, 2nd Regt. National Guard of N. J., 1900-06; lt.-col., assistant inspector of general rifle practice, 1906; colonel, 1917. Major (Ordance), R. C., February 20th, 1918. Assistant chief instructor, Small Arms Firing School, May 13, 1918. Lt.colonel (Infantry), September 8th, 1918. Chief rifle demonstrator, October 1st, 1918.

Member of Peary Relief expeditions, 1894, 1899. Libbey Glacier is named for him.

In 1902, between February 4th and March 15th, he made a journey of 600 miles on horseback through Palestine, exploring the entire Jordan Valley and visiting Petra.

Officier de l'Académie (France). F.R.G.S. Fellow and foreign secretary, American Geographical Society. Author of *Jordan Valley and Petra,* 1905.

Home: Princeton, N. J. Died September 6th, 1927. (*Who Was Who;* In Memoriam, A. A. C. minutes, by J. M. Thorington.)

1877. U. S. Rockies: More than 40 peaks above 14,000 ft., while assisting Prof. Arnold Guyot (1807-84) in hypsometric work, including Grays Pk., Pikes Pk., July 4th-5th; Mt. Lincoln, July 12th; Mt. Princeton, July 17th; Mt. Evans, July 14th. Lib-

bey wrote the topographic, hypsometric and meteorologic report of the expedition, which was made up of Princeton students, including his classmates, W. B. Scott and H. F. Osborn, afterward well known in geology and paleontology. They measured the elevations of Pikes Pk., Mt. Lincoln, Mt. Bross, Mt. Silverheels, Mt. Quandary, Mt. Princeton, Mt. Gray and Mt. Evans. See *Princeton Scientific Expedition of 1877* (1879).

1897. Mesa Encantada, N. M. (with H. L. Bridgman, q.v.), July 23rd. The summit was the legendary dwelling place of the Acoma people. Libbey's assertion that his expedition disproved the legend (see his 'Disenchanted Mesa,' *Harper's Weekly,* August 28th, 1897) gave rise to a newspaper battle between himself and other ethnologists, subsequent investigation revealing indisputable proof of former human inhabitance.

ROGER BIGELOW MERRIMAN

(1905, resigned 1913)

Born at Boston, Mass., May 24th, 1876. Son of Daniel and Helen (Bigelow) Merriman. Married Dorothea Foote, June 2nd, 1894.

Noble and Greenough School. Harvard (A.B., 1896; A.M., 1897; Ph. D., 1902). John Harvard Fellow in Europe, 1900-02. Balliol College, Oxford (B.Litt., 1899; Litt.D., 1922). Glasgow U. (LL.D., 1929). Cambridge U. (Litt.D., 1935). Hobart Coll. (L.H.D., 1942).

Instructor in history, 1902-08; assistant professor, 1908-18; professor, 1918-28; Gurney professor of history and political science, Harvard, from 1929 until his retirement in 1941.

Harvard exchange professor at Sorbonne, 1925-26; David Murray lecturer, Glasgow U., 1937. Captain, U. S. army, 1918. Chevalier de la Légion d'Honneur, 1936.

Fellow, American Academy of Arts and Sciences. Vice-president, Mass. Historical Society. Corresponding member of Academia de la Historia, Madrid.

Author of *Life and Letters of Thomas Cromwell,* 1902; *Gomara's Annals of Charles V,* 1912; *Rise of the Spanish Empire,* 1918; *Six Contemporary Revolutions,* 1938; *Suleiman the Magnificent,* 1944.

Home: Cambridge, Mass. Died at St. Andrews, N. B., September 7th, 1945. (*Who's Who; N. Y. Times,* September 8th, 1945.)

Recorded but undated ascents are: Breithorn, Mischabel, Monte Rosa, Obergabelhorn, Piz Morteratsch.

HENRY FAIRBANKS MONTAGNIER

(1903, d. m. 1933)

Born at Cincinnati, O., in 1877. Married Armande Vultier in 1910.

Educated at Armor Military School and Princeton U., leaving the class of 1899 in the spring of his junior year.

His ancestors on his father's side were French, a Lyonnais family which founded Terre Haute, Ind., where he passed his childhood. His mother's family (Fairbanks) settled in New England in the seventeenth century. His parents died when he was young, and independent means allowed him to travel. With his grandmother, a women keenly interested in literature, he always spoke French, and to this association may be traced an inclination toward research. He devoted himself to the history of Alpine exploration, and in this made an enduring name.

At the age of 17 he made his first visit to Europe, bicycling over main roads of the Alps from the Maritimes through Dauphiné and Savoy to the Simplon, visiting Chamonix and Zermatt. The reading of Whymper's *Scrambles* further directed his attention toward mountain ranges. In 1897, at the age of 20, he made several ascents in the Oberland, and thereafter climbed in nearly every season until the year of his death. He climbed with many celebrated British, Swiss and French mountaineers, including C. G. Bruce, E. R. Blanchet and Chevalier de Cessole. He studied at Brussels and travelled extensively, visiting India, South America and Africa.

He joined the Alpine Club (London) and the American Alpine Club in 1903. F. R. G. S. (1906). Member of the Swiss, Italian and Japanese Alpine Clubs, the Himalayan Club, French Geographical Society, Soc. des Touristes du Dauphiné, Sierra Club and Mountaineers. Hon. member of the French Alpine Club and of the G. H. M. Corresponding member of the Appalachian Mountain Club.

For a number of years he lived at San Remo, Italy, afterward in Berne (1915-20), Champéry and Paris. At Champéry he built up a library of more than 10,000 volumes, several hundred of which he gave to the American Alpine Club and 1500 more being received after his death, the Club's collection now being known as The Montagnier Library. He represented the Club at the International Congress of Alpinism at Chamonix in 1932.

Montagnier's name will endure as a commentator and investigator on the literature of Mont Blanc. He assisted H. Dübi with *Paccard wider Mont Blanc,* 1903, and collaborated with D. W. Freshfield in the *Life of H. B. de Saussure,* 1920. He edited (with Commandant Gaillard) two monographs on de Saussure: *Journal d'un Voyage a Chamouni,* 1926, and *Le Mont Blanc et Le Col du Géant,* 1927.

Home: Paris, France. Died at Montreux, Switzerland, July 16th, 1933. (In Memoriam, with portrait, *A. A. J.* ii, 234, by J. M. Thorington; with portrait, *A. J. 45,* 373, by C. Wilson, H. Dübi and C. G. Bruce.)

1897. Strahlegg Pass, Jungfrau, Mönchjoch.

1899. Matterhorn, Weisshorn, Monte Rosa, Zinal Rothhorn, Obergabelhorn, Untergabelhorn, Breithorn, Dom, Rimpfischhorn, Dent du Midi.

1901. Aig. du Midi, Aig. des Gds. Charmoz (traverse); Grand Combin (Valsorey to Panossière); Col de Seilon, Col Sud de Bertol, Lyskamm, Adler Pass, Schwarzberg Weissthor.

1902. Eiger, Wetterhorn, Schreckhorn.

1903. Himalayas: Visited Biafo and Baltoro Glaciers; crossed Tulley La (16,000 ft.) and Chorbat La (16,696 ft.).

1904. Alphubel, Weissmies, Portjengrat, Laquinhorn, Col de Chardonnet, Aig. d'Argentière, Aig. du Moine.

1905. Triftjoch, Grand Cornier, Mont Collon, Mont Blanc (Courmayeur to Chamonix via Cabane du Dôme); Ruinette.

1905. Andes: El Misti (19,300 ft.).

1906. Aig. du Grépon, Dent du Requin, Aig. du Tacul, Aig. du Chardonnet, Tour Noir, Aig. de Blaitière, Mont Blanc (from Col du Géant over Mont Blanc du Tacul and Col du Mont Maudit, descending to Grands Mulets).

1907. Aig. du Géant, Col du Géant, Grivola (Valsavaranche to Cogne); Grand Paradis (Cogne to Ponte); Grande Motte, Grande

Casse, Point de la Glière, Dôme de Chasseforet, Pointe de Vallonet, Dent Parraché.

1907. Canaries: Teneriffe (12,200 ft.; seven times); Chahorra (10,100 ft.), while conducting investigations of volcanic gases and the temperatures of lavas with Dr. Albert Brun.

1908. Bietschhorn, Petersgrat (twice); Tschingelhorn, Finsteraarhorn, Mönch, Altels, Balmhorn, Mont Blanc (from Tête Rousse).

1909. Tödi, Grosse Windgälle, Oberalpstock, Düssistock, Claridenstock, Gross Scheerhorn, Rhonestock, Dammastock, Fleckistock, Wildhorn, Mont Vélan, Sustenhorn, Gwächtenhorn.

1911. Cima Tosa, Cima di Brenta, Presanella, Corno Bianco, Cima di Presena, Palon della Mara, Cevedale, Königspitze, Schrotterhorn, Kreilspitze, Ortler (Hinterergrat); Weisskugel, Wildspitze, Fluchtkogel, Hochvernagtspitze, Grosse Ramolkogel, Mösele, Schwarzenstein, Gross Venediger, Rainerhorn; and three passes over 9000 ft.

1912. Cima des Gélas, Monte Matto, Punta d'Argentera, La Maledia, Le Brocan, Le Baus, Mont Pelat, Tête de Moyse, Breche de Chambeyron (1st ascent by French side); Bricfroid, Tête de la Meyna, Rocher de St. Ours, Roccia Blancia, Monte Viso, Aig. de Pélens (2nd ascent); also four peaks and one pass over 9000 ft. in the Var Valley.

1915. Cima des Gélas (twice); Mont Clapier, Cime de St. Robert, Cimiamnejas; also, many minor ascents.

1916. Aig. du Tour, Piz Languard.

1917. Titlis, Wendenstock, Muttenhorn, Maasplankstock, Blümlisalphorn, Jungfrau (Roththal); Oberaarhorn, Scheuchzerhorn, Mittaghorn, Egginerhorn, Allalinhorn, Monte Rosa (Nordend); Siedelhorn; also, seven passes over 9000 ft.

1918. Weisse Frau, Gspaltenhorn, Rinderhorn, Morgenhorn, Doldenhorn, Wildstrubel, Fisistock, Tschingellochtighorn, Steghorn.

1919. Dent du Midi (Haute Cime; Dent Jaune); Dent Blanches de Champéry.

1920. Cime de l'Est, Petit Ruan, Forteresse, Cathédrale, Fenêtre de Soix, Wildstrubel.

1921. Doigt, Cime de l'Est, Mount Ruan, Mittaghorn, Egginerhorn, Allalinjoch, Monte Rosa, Wellenkuppe, Dent Blanche, Dent du Midi (Haute Cime); Fenêtre de Soix.

1922. Grand Muveran, Haute Cime, Eperon, Col de la Dent Jaune, Col de la Fenêtre de Soix, Dôme and la Tour Sallières, Pic de Tenneverge.

1923. Haute Cime, Cime de l'Est, Tour Sallières, Ruinette, Col de Bertol.

1924. Haute Cime, Cime de l'Est, Petite Dent de Morcles (twice).

1925. Haute Cime, Piz Medel, Güferhorn, Piz Tschierva, Fuorcla d'Es-Chia, Piz Bernina.

1926. Piz Casnil, Cima di Cantone, Piz d'Err, Piz Bacone, Pizzo Cacciabella, Cima della Bondasca, Piz Corvatsch.

1927. Karakoram Himalayas: Srinagar to Gilgit, thence to Baltit in Hunza State; crossed Karun Pir (15,982 ft.) and Boesam Pir (15,700 ft.) and explored Ghujerab Valley.

1928. Dent Blanche de Champéry, Silvrettahorn, Piz Buin, Fluela-Weisshorn.

1929. Trifthorn, Dent Blanche de Champéry, Diablerets, Cime de l'Est, Dent Jaune, Mont Ruan.

1930. Cime de l'Est, Haute Cime, Col de la Tour Sallières.

Wrote for *A. J.*: 'A Bibliography of the Ascents of Mont Blanc, 1786-1853' (*25,* 608; *30,* 114; *33,* 13); 'Dr. Paccard's Lost Narrative' (*26,* 36); 'Monte Rosa from the Zermatt Side, 1847-60' (*31,* 305); 'Early Records of Passes of the Zermatt District' (*32,* 42); 'A Journey to the Himalaya in 1903' (*32, 252*); 'The Early History of the Col du Géant and the Legend of the Col Major' (*33,* 323; *34,* 347); 'Thomas Blaikie and Michel-Gabriel Paccard' (*45,* 1).

HOWARD PALMER

(1908, S. 1914-16, C. 1917-22, V. P. 1923-25, P. 1926-28, C. 1929-44, d. m. 1944)

Born at Norwich, Conn., November 28th, 1883. Son of George S. and Ida Amelia (Cooke) Palmer. Unmarried.

Yale (B.A., 1905). Harvard (LL.B., 1908).

Admitted to the Massachusetts bar, 1908. Secretary and director of Palmer Bros. Co., New London, Conn., 1918-28. Trustee, New London Public Library. Vice-president, New London Co. Historical Society. Member of American Institute of Mining Engineers.

F. R. G. S., Corresponding member of the Geographical Society of Philadelphia. Member of the Alpine Club (London), Appalachian Mountain, Harvard Travellers, Explorers and Fresh Air Clubs.

In the Selkirk Range a peak, glacier and river are named for him.

Author of *Mountaineering and Exploration in the Selkirks,* 1914; *A Pioneer in the Canadian Alps* (E. W. D. Holway, q.v.), 1931; *A Climber's Guide to the Rocky Mountains of Canada* (with J. M. Thorington), 1921. Editor of *Life on a Whaler,* 1929; *American Alpine Journal,* 1930-33. Contributor to *Harvard Handbook of Travel,* 1917, 1935; *Encyclopedia Britannica,* 1939.

Home: Pawcatuck, Conn. Died October 24th, 1944. (*Who's Who*); In Memoriam, with portraits, *A. A. J.* v, 406, by J. M. Thorington, H. S. Hall and J. W. A. Hickson; *App.* x (n.s.), 237, by M. Hurd; *C. A. J.* xxix, 135.

1907. Mt. Shasta (to 14,000 ft.; guideless): Mt. Rainier (to 14,000 ft.; guideless). Canadian Rockies and Selkirks: Mt. Temple, Mt. Victoria (S.E. Peak, during traverse of Abbot Pass); small peak below E. shoulder of Mt. Hungabee; Wastach Pass, Mitre Pass, Mt. Burgess (traverse; alone). Mt. Afton (traverse).

1908. Selkirks: Mt. Sir Donald; with B. S. Comstock (q.v.): Hermit Mtn., Cornice Pk. (1st ascent), July 22; with F. K. Butters (q.v.) and E. W. D. Holway (q.v.): Mt. Fox, July 30th; Mt. Donkin (from W.), August 2nd; Mt. Selwyn (traverse), August 4th; Cyprian Pk. (1st ascent), August 12th; Mt. Wheeler (2nd ascent, new route), August 14th.

1909. Selkirks: Mt. Sifton (alone), June 13th; Mt. Stockmer (1st ascent; with B. S. Comstock), June 21st; Azimuth Pk. (alone), June 30th; with F. K. Butters and E. W. D. Holway: Mt. Kilpatrick (1st ascent), July 18th; Mt. Dawson (from S.), July 21st; Augustine Pk. (1st ascent), July 23rd; Mt. Purity and first crossing of Purity Range, August 6th; Terminal Pk., August 9th; Mt. Tupper.

1910. Selkirks: Rogers Pk.; with F. K. Butters and E. W. D. Holway: Guardsman Mtn. (1st ascent), July 12th; The Footstool (1st ascent), July 12th; Alpina Dome (1st ascent), July 18th; Pioneer Pk. (The Gothics; 1st ascent), July 21st; Mt. Topham

(1st ascent), August 6th; Macoun, August 8th; with E. W. D. Holway: Grand Mtn. (1st ascent), August 18th.

1911. Selkirks: With F. K. Butters and E. W. D. Holway: Citadel Mtn. (1st ascent), June 16th; Belvedere Pk. (1st ascent), June 20th; Goldstream Pk. (1st ascent), July 15th; Mt. Redan (1st ascent), July 17th; Austerity Mtn. (1st ascent), July 20th; Mt. Holway (1st ascent), August 7th; Sorcerer Mtn. (3rd ascent; new route), August 14th; with F. K. Butters; Uto (traverse); with E. W. D. Holway: Leda Pk., Castor Pk., Pollux Pk., Rampart.

1912. Selkirks: Mt. Swanzy (with F. K. Butters); with E. W. D. Holway; Mt. Sir Sandford (1st ascent), June 24th; Adamant Mtn. (1st ascent), June 26th; Mt. Sir Donald (4th ascent by N.W. arête), July 30th.

1915. Selkirks: Three peaks (7330 ft., 7750 ft., 7950 ft.) between French Creek and Columbia River, and two peaks (7850 ft., 8300 ft.) at head of Mica Creek (all 1st ascents; with R. H. Chapman); Nettie L. Mtn. (1st ascent), August 10th; with F. K. Butters: Mt. Smart (1st traverse); Mt. Bonney. Unnamed 8812 ft., N. of Baloo Pass (1st ascent; alone).

1916. Selkirks and Canadian Rockies: Mt. Asulkan; Mt. Fox (round trip in one day from Glacier House; with G. M. MacKee). In this and earlier years he had made ten traverses of Asulkan Pass, nine of Donkin Pass and three of Lily Col. With A. J. Gilmour and E. W. D. Holway: Mt. Longstaff (1st ascent), July 27th; Mt. Phillips (2nd ascent; new route), August 1st; Unnamed 9300 ft. (1st ascent), August 5th.

1919. Canadian Rockies: Mt. Victoria, The Mitre, McDonell Pk. (1st ascent; with A. Carpe, R. H. Chapman), August 17th; Paragon Pk. (1st ascent; with A. Carpe), August 19th.

1920. Canadian Rockies: With A. Carpe: Mt. Serenity (1st ascent), September 1st; Mt. King Edward (attempt, to 10,800 ft.).

1922. Canadian Rockies: With J. M. Thorington (A. A. C., 1918): Burgess Pass, July 4th; Mt. Barnard (1st ascent), July 14th; Mt. Trutch (1st ascent), July 14th; Mt. Nanga Parbat (1st ascent), July 16th; Mt. Gilgit (1st ascent), July 16th; Mt. Freshfield (4th ascent), July 18th.

1923. Canadian Rockies and Selkirks: Opabin Pk.; with A. Carpe: Replica Pk. (1st ascent), July 6th; Mt. Henry MacLeod (1st ascent), July 9th; Mt. Valad (1st ascent), July 9th; Mt.

Brazeau (1st ascent), July 9th; Mt. Unwin (1st ascent), July 13th. Rogers Pk., Fleming Pk.

1924. Canadian Rockies: With J. W. A. Hickson (q.v.): Little Alberta (1st ascent), August 21st; Mt. King Edward (1st ascent), August 22nd.

1925. Canadian Rockies: Bastion Pk. (1st ascent; with J. W. A. Hickson), August 12th.

1926. Canadian Rockies: With J. W. A. Hickson: Mt. Fryatt (1st ascent), July 10th; Mt. Lapensée (1st ascent), July 14th; Peak A (1st ascent), July 18th; Throne Mtn. (1st ascent), July 26th.

1927. Canadian Rockies: Unnamed 10,400 ft. (Siffleur River; 1st ascent); Recondite Pk. (1st ascent).

At various times he had also ascended 25 of the highest summits of the Adirondack, Catskill, Green and White Mtns.

Wrote for *A. A. J.:* 'The First Ascent of Nettie L. Mtn.' (i, 40); 'The Rocky Mountains of the United States' (i, 360); 'Early History of the American Alpine Club' (v, 163); 'More About Mountain Mysticism' (v, 349); for *A. J.:* 'Three New Ascents in the Selkirks' (*25,* 245); 'The First Ascent of Mt. Sir Sandford' (*27,* 300); 'Climbs in the Maligne Lake District' (*36,* 93); 'Mt. King Edward' (*37,* 306); 'An Early Visit to Tonquin Valley' (*38,* 56); for *App.:* 'A Pioneer Reconnaissance in the Northern Selkirks' (xi, 16); 'A New Story about Mount Dawson' (xii, 123); 'The Ascent of Grand Mountain' (xii, 362); 'Pioneering Beyond Mt. Robson' (xv, 1); 'Travel and Ascents Among the Highest Canadian Rockies' (xvi, 257); 'A Note on Mt. Alberta' (xix, 408); 'Breaching the Barriers of Mt. Fryatt' (xx, 421); 'The First Ascent of Throne Mountain' (xx, 441); for *B. G. S. P.:* 'Explorations for the Canadian Pacific Railway' (xiv, 75); for *G. J.:* 'Explorations About Mt. Sir Sandford' (xxxvii, 170); 'Observations of the Sir Sandford Glacier' (xxxix, 446); 'Topography of the Gold Range and Northern Selkirks' (lvii, 21); for *S. C. B.:* 'The Mountains of Tonquin Valley' (xiii, 1).

Also: 'Notes on the Exploration and Geography of the Northern Selkirks' (*Bull. A. G. S.* xliv; Apl., 1912); 'A Visit to the Clearwater group' (*Harvard Mountaineering;* June, 1928); 'Some Tramps Across the Glaciers and Snow Fields of British Columbia' (*Natl. Geogr. Mag.,* June 1910); 'To the Apex of the Selkirks'

(*Outing* lxii, May 1913); 'Observations of the Freshfield Glacier' (*J. of Geol.* xxxvii, May 1924); 'The Freshfield Glacier' (*Smithson. Misc. Coll.* lxxvi, May 1924); 'The Rocky Mountains' (*Encycl. Brit.* 14th ed. 1909); 'Mountain Climbing' (Chapter in *Harvard Handbook of Travel;* 1917, 1935); the work done by himself and R. H. Chapman in 1915 appeared as a 'Reconnaissance Map of the Northern Selkirk Mountains and the Big Bend of the Columbia River, B. C.' (Ottawa, 1920). Also, In Memoriam; *A. A. J.:* H. Putnam (ii, 203); H. G. Bryant (iii, 108); H. P. Nichols (v, 278); W. A. Brown (v, 297); L. L. Delafield (v, 405); *C. A. J.:* B. F. Seaver (xvii, 7).

EDWARD TAYLOR PARSONS

(1905, V. P. 1914-, d. m. 1914)

Born near Rochester, N. Y., March 15th, 1861. Married Marion Randall (A. A. C., 1915; she was the amanuensis of John Muir), 1907.

His boyhood was spent on a farm. Entered Rochester Academy at age of 18. Rochester U. (1886; M. A., 1888). Financial stress made him forego the legal profession for business, his work thereafter requiring lengthy journeys.

Member of Mazamas (1896), Mountaineers (charter member, 1907) and Sierra Club (1900), in the affairs of which he was long active. Took a prominent part in the lost cause of the Hetch-Hetchy Valley. The Sierra Club's Parsons Memorial Lodge, Tuolumne Meadows, and Parsons Pk. are named for him.

Home: Berkeley, Cal. Died May 22nd, 1914. (In Memoriam, with portrait, *S. C. B.* ix, 219, by John Muir and W. E. Colby; *Mazama* iii, 20, by R. Glisan.)

1896. Mt. Siskiyous, Mt. Pit (S.E.); Crater Lake Mtn.

1897. Mt. Rainier.

1899. Mt. Shasta.

1900. Mt. Jefferson (S.); Mt. Agassiz (W.); San Francisco Pks.

1901. Mt. Lyell, July 16th; Mt. Dana, Mt. Hoffmann.

1902. Mt. Brewer.

1903. Mt. Whitney, Mt. Williamson (W.), July.

1904. Mt. Lyell, July 16th.

1905. Mt. Hood (S.); Mt. Rainier (led party of 62 to sum-

mit), July 24th-25th; Mt. Shasta (led party of 28 to summit), August 5th.

1906. Goat Mtn.
1907. Mt. Ritter (W.).
1908. Red Kaweah.
1909. Haleakala.
1913. Mt. Seattle, Mt. Olympus.
Three descents of Tuolumne Canyon, 1904-07-09.

Wrote for *Mazama:* 'Mt. Rainier' (ii, 25); for *S. C. B.:* 'The Mazamas on Mt. Jefferson' (iii, 203); 'The Sierra Club Outing in Tuolumne Meadows' (iv, 19); 'Climbing Mt. Brewer' (iv, 278); 'The Notable Mountaineering of the Sierra Club in 1903' (v, 44); 'The San Francisco Peaks in April' (v, 108); 'William Kent's Gift' (vi, 285).

HENRY AUGUSTUS PERKINS
(1903)

Born at Hartford, Conn., November 14th, 1873. Son of Edward H. and Mary E. (Dwight) Perkins. Married Olga Finch, April 8th, 1903.

Yale (A.B., 1896). Columbia (M.A., E.E., 1899). Studies at U. of Paris and Coll. de France. Trinity (Sc. D., 1920). Phi Beta Kappa, Sigma Xi.

Professor of physics, Trinity, 1902- (acting president, 1915-16, 1919-20). Research in magnetism and metallic conductivity. Director of Phoenix Mutual Life Insurance Co. President of the board, American School for the Deaf, 1913-. Member of American Institute of Electrical Engineers, American Physical Society and Soc. Française de Physique.

Member of the Explorers Club.

Author of *Thermodynamics; College Physics,* 1938.

Home: Hartford, Conn. (*Who's Who.*)

1892. Breithorn.
1898. Mont Blanc, Matterhorn, Rimpfischhorn.
1909. Mont Tondu, Dôme de Miage.
1922. Wildstrubel, Balmhorn, Blümlisalphorn.
1929. Uri-Rothstock.
Extensive travels in Iceland during two seasons (1900, 1902).

Wrote for *A. A. J.:* 'The Mountains of Iceland' (vi, 1).

HARRINGTON PUTNAM

(1903, V. P. 1908-11, P. 1911-14, C. 1914-19, d. m. 1937)

Born at Shrewsbury, Mass., June 29th, 1851. Son of Charles Adams Varnum and Ellen (Harrington) Putnam. A descendant of John Putnam, who settled in Salem, Mass., in 1634. Married Mildred Smythe, June 8th, 1904.

Colby Coll. (A.B., 1870). Studied at Heidelberg, 1873. Columbia (LL.B., 1876). LL.D. (Colby, 1906; Middlebury, 1911).

Admitted to bar, 1876, and practiced law in New York. Examiner, N. Y. State Civil Service Commission, 1884-89; Brooklyn Civil Service Commission, 1890-94. Justice of Supreme Court of N. Y., 1909-21. Lecturer on admiralty law, Cornell U. President of the American British Law Association (London), 1924.

Member of the firm of Wing, Shoudy and Putnam, later Wing, Putnam and Burlingham, 1885-1909. In 1926 he represented the American Bar Association and gave an address at the dedication of the Anglo-American Law Institute in Tokyo.

Member of the Appalachian Mountain, Green Mountain, French Alpine, Sierra, Explorers and Fresh Air (president, 1926) Clubs. His interest in walking and mountaineering developed while at Heidelberg and continued until his death. He was a close friend of Edward Payson Weston, the transcontinental walker, and accompanied him on several pedestrian tours through New England. 'Notes on Walking' (*App.* xvi, 473).

Home: Brooklyn, N. Y. Died April 7th, 1937, (*Who Was Who;* In Memoriam, with portrait, *A. A. J.* ii, 203, by H. Palmer.)

1893. Fujiyama.
1896. Breithorn.
1901. Mt. Shasta.
1902. Mt. Whitney.
1912. In January, when he was 60, he walked 72 miles between Friday and Monday, from his home in Brooklyn to Riverhead, L. I., where he was to open court.
1914. Mt. McIntyre, Mt. Mansfield, Mt. Marcy.

WILLIAM SYMMES RICHARDSON

(1904, resigned 1926)

Born at Kingston, Mass., February 1st, 1873. Son of Edward Harmon and Caroline (Symmes) Richardson. Unmarried.

Studied at U. of Cal. for two years with class of 1894 and for a year and a half at Mass. Institute of Technology. He was then abroad for a year and a half at École des Beaux Arts, Paris.

Architect; a member of McKim, Mead and White for many years after 1906. This firm designed the Banks of Montreal and Winnipeg, Girard Trust Co., Philadelphia, National City Bank and Pa. Railroad station, New York City. He served with the American Red Cross in Italy during 1918. Hon. corresponding member of American Institute of Architects.

His back was broken in a fall from a horse on his farm near Gladstone, N. J., in 1922, permanently paralyzing him from the waist down. For the rest of his life he lived abroad, his house in Rome being now a part of the American Academy. During this period he was accustomed to tour the Alpine roads at high speed in a specially built Italian car.

Home: Rome, Italy. Died April 5th, 1931. (*Who Was Who.*)

1904. Canadian Rockies: Mt. Victoria.

1906. Canadian Rockies: Attempts on Ringrose Pk. and Mt. Douglas.

1908. Matterhorn, Zinal Rothhorn (Zermatt-Mountet); Obergabelhorn (Mountet-Zermatt); Mont Blanc (traverse, Courmayeur-Chamonix via Dôme Hut and Bionnassay arête).

1909. Canadian Rockies: Mt. Hungabee (3rd ascent; new route); Mt. Schaffer (1st ascent); Mt. Goodsir (N. tower; 2nd ascent); Ice Pass (Ice River to Field in 30.5 hours; first crossing). Made a ten-day packtrain journey to the Lyell and Freshfield areas, and was the first to camp on the Niverville meadow, bad weather preventing climbs.

1910. Canadian Rockies: Mt. Chephren (1st attempt from Mistaya River).

1914. Aig. de la Brenva (1st traverse of lower Brenva ridge); Aig. Joseph Cru (by the plaques and traverse); Aig. Rouge du Triolet (3rd ascent; new route); Dent du Géant, Dent du Requin, Gran Paradiso (all with J. Wood, Jr., A. A. C., 1915); Grivola (traverse).

In the period 1912-14 he was one of the first Americans to combine skiing with climbing. In 1913, with J. Wood, Jr., he went to Morocco in December, but was prevented by bandits from reaching the Great Atlas.

Wrote for *A. J.*: 'From Noon to Midnight on an Ice Slope' (*25*, 524).

ABBOTT LAWRENCE ROTCH

(1903, C. 1907-12, d. m. 1912)

Born at Boston, Mass., January 6th, 1861. Son of Benjamin Smith and Annie Bigelow (Lawrence) Rotch. Married Margaret Randolph Anderson, November 22nd, 1893.

Educated in private schools and with tutor, Paris, Florence, Berlin and Boston, 1875-80. Mass. Institute of Technology (S.B., 1884). Harvard (hon. A.M., 1891).

In 1885 he established and maintained the Blue Hill Meteorological Observatory, specializing in cloud investigation. Made first use of kites to obtain meteorological data. Professor of meteorology, Harvard, 1906-.

Made observations with kites above the Atlantic Ocean, 1901. First registration balloon observations to height of 10 miles, 1904 (*Science,* January 13th, 1905). First trigonometric measurement of pilot balloons in U. S., 1909. Took part in various scientific expeditions in U. S., South America, Europe and Africa.

Member of the Appalachian Mountain Club. Honorary member of the French Alpine Club. Librarian, American Academy of Arts and Sciences.

Author of *Sounding the Ocean of Air,* 1900; *The Conquest of the Air,* 1909; *Charts of the Atmosphere for Aeronauts,* 1911. Associate editor of the *American Meteorological Journal.*

Home: Boston, Mass. Died April 7th, 1912. (*Who Was Who; N. E. A.B.* 15:2, with portrait; *Early American Ascents,* 61.)

1890. Chamonix via Bosses to Mont Blanc, July 31st-August 2nd, during the inauguration of the Vallot Observatory.

1891. Chamonix via Corridor to Mont Blanc, August 29th-31st. Chamonix to Bosses, October 5th-7th.

1893. Chachani (Peru) to 16,000 ft., March 9th-10th; El Misti.

1903. Chamonix to Rocher de la Tournette, August 28th-29th. Mont Blanc (descent via Aig. du Gôuter), August 31st-September 1st.

1906. Col du Géant, September 27th-28th.

Wrote for *App.*: 'The Exploration of the Air' (viii, 179); 'Five Ascents to the Observatories on Mont Blanc' (x, 361); 'An Autumn Passage of the Col du Géant' (xi, 211).

ALDEN SAMPSON

(1905, d. m. 1925)

Born at Manchester, Me., March 13th, 1853. Son of Alden and Sarah Taber (Pope) Sampson. Married Mary Agnes Yarnall, June 10th, 1890.

Haverford (A.B., 1873; A.M., 1876). Harvard (A.B., 1876; A.M., 1877). Student at Harvard Law School, 1878-80.

U. S. Biological Survey, 1907, for establishment of game refuges in national forests. Lecturer on literature, art and archeology, mountaineering and life of the forest. Active in effort to protect Hetch-Hetchy Valley, Cal., from conversion into reservoir.

Author of *Milton's Sonnets,* 1886; *A Bear Hunt in the Sierras,* 1895; *The Establishment of Game Refuges,* 1900; *Essays on Wild Life,* 1905; *Studies in Milton,* 1912.

Home: Washington, D. C. Died January 5th, 1925. (*Who Was Who.*)

Recorded ascents are: Half Dome (1884); Mt. Rainier, Mt. Harvard, Mt. Whitney; Mt. Brewer and Goat Mtn. (both 1906).

Wrote for *S. C. B.*: 'A Deer's Bill of Fare' (v, 194); 'Wild Animals of the Mt. Rainier National Park' (vi, 32); 'The Aftermath of a Club Outing' (vi, 153).

BENJAMIN FRANK SEAVER

(1903, T. 1919-29, V. P. 1929, d. m. 1929)

Born at Brooklyn, N. Y., March 17th, 1857. Son of Benjamin Francis and Lucy (Jewett) Seaver. He was one of the seventh generation descended from Robert Seaver, who was made a freeman at Roxbury, Mass., in 1637. His father was twice mayor of Boston. Unmarried.

For many years confidential adviser to the investment firm of White, Weld and Co., New York City.

His climbing began in the White and Catskill Mountains. Member of the Appalachian, Sierra and Green Mountain Clubs and of the Fresh Air Club. Also of the Alpine Club of Canada (1907;

several times chairman of the N. Y. section) and the French Alpine Club.

He raised a fund for the Swiss guide, R. Taugwalder, who was crippled by frostbite while in the employ of Miss A. Peck (q.v.) on Mt. Huascaran (1908). He was one of the A. M. C. committee which raised a fund for those who rendered assistance in the fatal accident to Prof. Stone on Mt. Eon (1921). By will (1913) he left bequests to the clubs in America of which he was a member, and his mountaineering books to the Brooklyn Public Library.

His health failed in Canada in 1928, in which season he received a timely honor in the opening of the Seaver Hut at Banff.

Home: Brooklyn, N. Y. Died April 26th, 1929. (In Memoriam, *A. A. J.*. ii, 213, by H. Putnam; with portrait, *C. A. J.* xvii, 74, by H. Palmer; also *App.* xvii, 383.)

1902. Canadian Rockies: Mt. Stephen.
1903. Canadian Rockies: Mt. Lefroy, August 8th.
1909. Canadian Rockies: Mt. Aberdeen.
1914. Canadian Rockies: Mt. Daly, Mt. Niles.
1915. Canadian Rockies: Mt. Vice President.
1923, 1924. Attended A. C. C. camps at Larch Valley and Mt. Robson.

JOHN DUKE SMITH

(1906, d. m. 1941)

Born at Andover, Mass., December 19th, 1874. Unmarried.

Phillips Academy, Andover. Harvard (LL.B., 1900).

Admitted to Massachusetts bar, 1900. Practiced law in Boston, 1900-20 and 1936-41: Smith and Clark, 1910-20; Mulcahy, Smith, Canavan and Troy, 1936-41. Special attorney to general counsel U. S. Office of Internal Revenue, Washington, D. C., 1900-28, and special assistant U. S. attorney at Boston in charge of Federal Income and Estate Taxes, 1928-36.

Member (1922) of the Alpine Club (London).

Home: Andover, Mass. Died at Boston, September 20th, 1941. (Obit. Record of graduates of Yale.)

1902. Breithorn.
1904. Canadian Rockies and Selkirks: Mt. Lefroy, Mt. Victoria. Mt. Sir Donald (record ascent: 4 h. 25 m. from Glacier House; descent 2 h. 50 m.).

1907. Matterhorn, Weisshorn, Obergabelhorn, Zinal Rothhorn, Lyskamm, Mont Blanc, Dent du Requin.

1909. Monte Rosa, Dome, Dent d'Hérens, Dent Blanche, Aig. du Midi, Aig. Verte, Aig. du Grépon (traverse); Wetterhorn, (traverse); Mönch, Jungfrau (Bergli route).

WILLIAM LORD SMITH

(1910, resigned 1913)

Born at Worcester, Mass., February 9th, 1863. Son of Charles Worcester and Josephine Caroline (Lord) Smith. Unmarried.

Harvard (A.B., 1886; M.D., 1892).

House officer, Massachusetts General Hospital, 1890-91. Postgraduate work in Vienna, 1892.

Hunting in Norway, 1892, followed by expedition to Somaliland; Africa. Traveled in Europe and the East, 1893-98. Began practice of medicine in Boston, 1898. Abroad 1902-04, chiefly in Persia, becoming in 1904 physician extraordinary to the Shah.

His travels in the East included Korea, China, Java and New Guinea, and at unspecified but later times he hunted in Alaska and Asia. In 1909 he was medical advisor to a hunting expedition in Sonora, following this by an expedition to British East Africa, collecting some 30 different varieties of wild game for the Agassiz Museum.

Feeling unfitted for medicine, he turned to writing and lecturing, becoming connected with the American Museum of Natural History. F. R. G. S. Member of Harvard Travellers Club.

Home: New York City. (Harvard, Class of 1886, 7th report, 1911; 2 portraits.)

1892. While a student in Vienna made climbing excursions in Styria, Tyrol and Switzerland.

1908. Chamois hunting and climbing in the Dolomites, where he specialized in photographing guides and climbing parties in difficult situations.

RALPH STOCKMAN TARR

(1909, d. m. 1912)

Born at Gloucester, Mass., January 15th, 1864. Son of Silas Stockman and Abigail (Saunders) Tarr. A descendant of Richard Tarr, first settler of Rockport, Mass. Married Kate Story, March 28th, 1892.

Harvard (B.S., Lawrence Scientific School, 1891).

Assistant, U. S. Fish Commission and Smithsonian Institution, 1882-83. Assistant geologist, Texas Geological Survey, 1889. Assistant, U. S. Geological Survey, 1888 and 1891; special field assistant, 1903-06.

Assistant in geology, Harvard, 1890-91. Assistant professor of geology, 1892-97; professor of dynamic geology and physical geography, 1897-1906; professor of physical geography, 1906-, Cornell.

President, Association of American Geographers, 1911-12. Member of International Committee on Glaciers. Corresponding member, Royal Geographical Society of Vienna. Associate editor, Bulletin of the American Geographical Society, 1899-1911, and of the Journal of Geography, 1902-12.

Besides field work in New Mexico, Montana and Texas, he organized the Cornell Greenland expedition which went north on Peary's ship in 1896, and in 1909 and 1911 he conducted the National Geographic Society's expeditions to Alaska (*Natl. Geogr. Mag.* xxi, 1).

Author of *Economic Geology of the United States,* 1893; *Elementary Physical Geography,* 1895; *Elementary Geology,* 1897; *First Book of Physical Geography,* 1897; *Tarr and McMurray Geographies,* 1900; *Alaskan Glacier Studies* (with L. Martin, 1914; awarded the gold medal of the Paris Geographical Society).

Home: Ithaca, N. Y. Died March 21st, 1912. (*Who Was Who; Dict. Amer. Biogr.; American Men of Science; N. Y. Times,* March 22nd, 1912).

1896. Upper Nugsuak Peninsula, Greenland.

1899. Study of Yakutat Bay, Alaska.

1909, 1911. Studies of Alaskan glaciers, St. Elias region and Prince William Sound.

1910. Expedition to Spitsbergen.

MARY VAUX WALCOTT

(1904, d. m. 1940)

Born at Philadelphia, Pa., in 1860. Daughter of George and Sarah (Morris) Vaux. Sister of George Vaux, Jr. (q.v.) and William S. Vaux, Jr. (q.v.). Married Charles D. Walcott (director of the Smithsonian Institution) in 1916.

A director of many charities in Philadelphia and operated a model dairy farm. Appointed by President Coolidge in 1927 to succeed her brother, George Vaux, Jr., on the Board of Indian Commissioners, on which she served until its discontinuance in 1933.

An original member of the Alpine Club of Canada (hon., 1914). Mt. Mary Vaux, in the Canadian Rockies, is named for her. Member of the American Association for the Advancement of Science, Academy of Natural Sciences of Philadelphia, Association of Women Geographers, Trail Riders of the Canadian Rockies.

In the Selkirks she made annual measurements of Illecillewaet and Asulkan Glaciers, 1898-1922, with George Vaux, Jr., and William S. Vaux, Jr. (q.v.). First photographs of Illecillewaet Glacier, 1887. In the Canadian Rockies she carried out early measurements of Victoria and Yoho Glaciers.

Author and illustrator of *North American Wild Flowers* (5 vols., Smithsonian Inst., 1925; a supplementary volume deals with pitcher plants).

Home: Washington, D. C. Died August 22nd, 1940. In Memoriam, with portrait, *A. A. J.* iv, 285, by J. H. Scattergood; C. A. J. xxvii, 236).

1899. Selkirks: Mt. Avalanche.

1900. Canadian Rockies: Mt. Stephen, Abbot Pass (both with W. S. Vaux, Jr., q.v.; both for the first time by a woman).

1910. Canadian Rockies: Consolation Valley camp, afterward taking part in the expedition up the Bow and down the Yoho, making the first crossing of Vulture Col.

Wrote for *C. A. J.*: 'Camping in the Canadians Rockies' (i, 67); 'Observations on Glaciers in 1909' (iii, 127; v, 59).

ARTHUR OLIVER WHEELER

(1903, d. m. 1945)

Born at Kilkenny, Ireland, May 1st, 1860. Son of Capt. Edward Oliver and Josephine (Helsham) Wheeler. Brother of Hector George Wheeler (q.v.). Married (1) Clara Macoun (daughter of John Macoun, the Canadian naturalist), June 6th, 1887; (2) Emmeline Savatard, October 1924.

Educated at a private school, Dublin; at Ballinasloe College, County Galway, Ireland, and Dulwich College, England.

Came to Canada with his parents in 1876 and served an apprenticeship in land surveying in Ontario. In 1878, on Indian Reserve surveys, he travelled from Winnipeg to Battleford with Red River carts. Qualified as Ontario land surveyor, 1881; Manitoba and Dominion land surveyor, 1882; British Columbia land surveyor, 1891; Alberta land surveyor, 1911. Subdivided a number of Canadian Pacific railway townsites along the line of construction, 1884.

In 1885 he was appointed to the Topographical Surveys Branch and received training in photo-topographical surveying, then being applied to mapping of the Canadian Rocky mountains. In the same year he was slightly wounded while serving as a lieutenant of the D. L. S. in the suppression of the Riel Rebellion, receiving the Saskatchewan medal and clasp.

In 1900 he mapped the Crowsnest area of the Canadian Rockies and in 1901-02 made a photo-topographical survey of the Selkirk Range along the line of the C. P. R. From 1903 to 1910 he continued surveys of the main range of the Rockies and was appointed topographer of the Department of the Interior. In 1913 he was appointed commissioner for B. C. on the Alberta-British Columbia boundary survey, carrying on this work until his retirement in 1925. Hon. member of Dominion Land Surveyors' Association, 1929.

An original member of the Alpine Club of Canada and first president (1906-10; managing director, 1911-26; hon. president, 1927-). Delegate, International Geographic Congress, Washington, 1904. Represented Alpine Club of Canada at the fiftieth anniversary dinner of the Alpine Club (London), 1907. Hon. member of A. C. (1908), Appalachian Mountain and French Alpine Clubs. Officer, Order of St. Charles, Monaco, 1921. Mt. Wheeler, in the Selkirk Range, is named for him.

Author of *The Selkirk Range,* 1905; *The Selkirk Mountains,* 1912. Editor of the *Canadian Alpine Journal,* 1907-27.

Home: Sidney, B. C. Died at Banff, March 20th, 1945. (*C. A. J.* xxvii, 205, with portrait; In Memoriam, with portrait, *A. A. J.* vi, 146, by F. N. Waterman; *App.* x (n.s.), 373, by H. S. Hall, Jr.; *C. A. J.* xxix, 140).

1897-1910. Canadian Rockies and Selkirks: Many ascents during the course of photo-topographical surveys, including: Mt. Daw-

son, Mt. Deville, Mt. Fox, Mt. Purity, Mt. Sir Donald, Rogers Pk., Swiss Pks., Mt. Swanzy, Mt. Bonney (S.E. summit), Mt. Grizzly, Mt. Wheeler (1st ascent; September 11th, 1902).

1907. Took part in ascent of the Schwarzhorn (Saas Fee), on which F. Bergne (A. C.) lost his life, January 1st.

1911. Canadian Rockies. Leader, Alpine Club of Canada expedition to Yellowhead Pass, Mt. Robson and Maligne Lake. Gendarme Mtn. (1st ascent); Mt. Mowat (1st ascent); The Colonel (1st ascent).

1913-25. Photo-topographical survey of the Alberta-British Columbia watershed from the International Boundary to the intersection of the watershed with the 120th meridian. 1918: Mt. Lambe (1st ascent); Mt. Bergne (1st ascent).

Wrote for *C. A. J.:* 'The Canadian Rockies as a field for an Alpine Club' (i, 36); 'A Glossary of Mountaineering Terms' (i, 123); 'The Alpine Club Jubilee' (i, 295); 'Observations of the Yoho Glacier' (i, 271, ii, No. 2, 121; iii, 123; iv, 53; vi, 163; viii, 118; ix, 76; xi, 182); 'Expedition to Yellowhead Pass' (iv, 82); 'The Alpine Club in Strathcona Park' (v, 82); 'Robson Glacier' (vi, 139; xiii, 158); 'The Application of Photography to the Mapping of the Canadian Rocky Mountains' (xi, 76; with M. P. Bridgland, q.v.); 'Notes on the Glaciers of the Main and Selkirk Ranges' (xi, 121); 'The Location of Mts. Brown and Hooker' (xii, 163); 'Mountain Reconnaissance by Airplane' (xiii, 146; 'The Mount Logan Expedition' (xiv, 9); 'Passes of the Great Divide' (xvi, 150); 'Rogers Pass at the Summit of the Selkirks' (xvii, 38); 'Mounts Brown and Hooker' (xvii, 66); 'Records of Glacial Observations in the Canadian Cordillera' (xxii, 172); 'Origin and Founding of the Alpine Club of Canada, 1906' (xxvi, 82); 'Some Memories of Edward Whymper' (xxviii, 83); for *A. J.:* 'The Mountains of Yellowhead Pass' (*26,* 382); for *App.:* 'Behind the Asulkan and Donkin Passes' (x, 123); 'Notes on the Altitudes of Mts. Columbia, Bryce, Lyell and Forbes' (x, 404).

HECTOR GEORGE WHEELER

(1903, d. m. 1909)

Born in London, 1873. Son of E. O. Wheeler, Kilkenny, Ireland. Brother of A. O. Wheeler (q.v.). Came with his parents to Canada, 1876. Unmarried.

Served an apprenticeship of five years as an engraver with the British American Bank Note Co., at its close becoming topographical draughtsman in the office of his brother, then topographer in the Department of the Interior.

Several published and many unpublished maps of the Selkirks and main range of the Canadian Rockies are from his pen.

An original member of the Alpine Club of Canada (1906), and assisted M. P. Bridgland (q.v.) in managing the mountaineering at the Club's early camps. Due to exposure in the field connected with his work he died at Revelstoke, B. C., July 6th, 1909. (In Memoriam, with portrait, *C. A. J.* ii, No. 2, 183, by A. O. Wheeler.)

1903. Canadian Rockies: Mt. Niblock, Mt. Hector, July 28th; Mt. Gordon, August 10th; Mt. Thompson, August 12th; Mt. Temple, September 1st; Mt. Daly, September 5th; Mt. Aberdeen, September 15th (all with M. P. Bridgland, q.v.).

1904. Canadian Rockies: Molar Mtn. (1st ascent), July 9th; Storm Mt., July 19th; Mt. Niles, August 5th; Mt. Wapta, August 15th; Mt. Balfour, August 24th; Mt. Carnarvon (1st ascent), September 9th; Mt. Stephen, September 17th; Mt. Des Poilus, October 6th; Mt. King, October 7th (all with M. P. Bridgland, q.v.).

Prior to 1908. Selkirks: Mt. Dawson, Mt. Deville, Mt. Rogers, Mt. Purity, Mt. Donkin.

1908. Selkirks: Asulkan Ridge (1st ascent).

GEORGE NOYES WHIPPLE

(1903, d. m. 1940)

Born at Boston, Mass., October 18th, 1856. Son of George and Elizabeth A. (Noyes) Whipple. Unmarried.

Governor Dummer Academy, Byfield. Amherst (1878).

In business of public storage warehousing, Boston, 1879-1905. Then, for a few years, connected with an advertising agency. In 1911 he founded and managed The Players, a lecture and musical agency with offices in Boston, London and San Francisco. Furnished speakers and entertainers to camps and hospitals, 1917-18.

Member of executive committee, Associated Charities, Boston, 1884-1903 (vice-president, 1885-93).

Member of the Appalachian Mountain Club. Chairman of A. A. C. nominating committee, 1929.

Home: Manchester, Mass. Died June 27th, 1940. (Biographical Records of Graduates, Amherst College.)

Recorded but undated ascents are: Jungfrau, Wetterhorn.

Wrote for *App.*: 'A Winter Ascent through the Great Gulf (Mt. Washington)' (xi, 7).

JAMES WILLIAM WHITE

(1905, d. m. 1916)

Born at Philadelphia, Pa., November 2nd, 1850. Son of Dr. James W. and Mary Anne (McClarnahan) White. Married Letitia Brown, June 2nd, 1888.

Philadelphia public schools and Quaker schools. U. of Pa. (M.D., Ph.D., 1871). Aberdeen (LL.D., 1906).

Surgeon, Eastern State Penitentiary, 1874-76. Surgeon, First City Troop Philadelphia City Cavalry, 1878-88. First professor of genito-urinary surgery, then professor of clinical surgery, U. of Pa. Then John Rhea Barton professor of surgery, emeritus professor of surgery, and trustee, U. of Pa. Consulting surgeon to the Philadelphia and Jewish Hospitals. Advisory surgeon, Pa. Railroad Co.

Author of *American Text Book of Surgery,* 1896; *Genito-Urinary Surgery,* 1897; *Human Anatomy,* 1906; *Text Book of the War for Americans,* 1915. Translator and editor of *Cornil on Syphilis,* 1875. An editor of *Annals of Surgery.*

Home: Philadelphia. Died April 24th, 1916. (*Who Was Who.* The central fountain of Rittenhouse Square, Philadelphia, is his memorial and bears his portrait in bronze by R. T. Mackenzie. His portrait, done by Sargent in 1909, is in the medical school, U. of Pa.).

1871-72. On staff of Prof. Louis Agassiz during the Hassler expedition to the West Indies, Straits of Magellan and Galapagos Islands. Mt. Aymond (Patagonia), Mt. Tijuca (Brazil); also minor ascents in Juan Ferdinandez, Galapagos and Tierra del Fuego.

Prior to 1908. Piz Palü, Ortler.

1914. Canadian Rockies: Visited Lake Louise with his wife.

PROCEEDINGS OF THE CLUB

SECRETARY'S ANNUAL REPORT

Year 1946 (1 November 1945 to 7 December 1946)

This is the 14th and will be the last report of your present Secretary. He wishes to thank the members for their friendly support of his efforts in behalf of the Club, and to say that two things have made his tenure of office most worthwhile to him, the many and constant personal contacts and long association with our members and others, and his intense satisfaction at seeing the Club grow in numbers, influence and prestige over the years.

During this first full year of peace the membership has had a substantial net gain of 16. Five Active members have died: Lennox H. Lindsay, Homer D. Erwin, H. F. J. Lambart, William Shand, Jr., and Herschel C. Parker (in 1944). Four members resigned. Twenty-four Active members were elected, and one member who had been lost track of in a distant land was reinstated. There are thus to be turned over to my successor nine Honorary and 310 Active members, a total of 318 (one being carried as both). Of these, 50 are women, who have ranged in proportion of ten to 20 percent (more recently about 16 percent) since the earliest days of the Club.

Membership growth since the founding of the Club is shown in the several booklets or lists as follows:

Year	*Active*	*Honorary*	*Total*
1902	45	—	45
1905	50	7	57
1908	60	9	69
1911	68	12	80
1914	74	12	86
1919	89	11	100
1923	112	15	127
1926	144	12	156
1929	183	10	193
1932	212	12	223
1935	215	9	223
1937	227	9	236
1940	255	10	264
1942	269	12	280
1944	283	11	293
1946	292	9	300
1946 (Dec.)	310	9	318

Five meetings of the Board of Directors have been held: on 1 December 1945, and on 13 April, 8 June, 28 September and 9 November 1946.

The 18th issue of the *Journal,* the 13th and last under Dr. Thorington's editorship, came out early in February. The new editors, David Allan Robertson Jr. and Robert H. Bates, assumed their duties during the year. Dr. Thorington's book *The Purcell Range of British Columbia* appeared in February, and members were allowed to request one free copy each for a limited period.

No general Club meetings other than the Annual Meeting and Dinner were held. However, the members in Seattle and vicinity held two meetings, one in May which all but two in the area attended, and one in September at which Maynard Miller gave the first account of the ascent of Mount St. Elias from which he had recently returned. The Denver and Colorado Springs members were entertained at dinner in May by President Case and Mrs. Cowles. On September 3rd the Secretary met some of the Colorado members at Miss Runnette's house in Denver, after which he was their guest at dinner at the University Club. Carl Blaurock showed slides of the Colorado mountains, and there was some discussion of Club affairs. Three or more meetings between several Club members and officers of the Mountain and Winter Warfare School and Training Center at Camp Carson were held at Mrs. Cowles' house in Colorado Springs.

From February 15th to May 5th, A. H. Jackman and W. P. House went the entire 3100 miles with the Canadian Army's "Exercise Musk-Ox" across far Northern Canada. R. H. Bates and W. A. Wood, Jr., flew up to visit the party at Cambridge Bay, Victoria Island. Seven of the Harvard Mountaineering Club party reached the summit of Mount St. Elias on July 16th: B. G. Ferris, Jr., Mr. and Mrs. A. J. Kauffman, W. R. Latady, M. M. Miller, C. and D. Molenaar. W. L. Putnam, still feeling the effects of wounds received in Italy, turned back at 16,000 feet. All eight are A. A. C. members. S. B. Hendricks led a party to the Northern Selkirks, last visited by Howard Palmer's last party there in 1912, which had first climbed Mount Sir Sandford. Hendricks' party crossed the Columbia River, below Surprise Rapids, from the road, in rubber boats. They made a new route (second ascent) on Sir Sandford, and first ascents of the higher Blackfriar and two minor flanking peaks of the Adamant Group. Plagued with much stormy weather, F. Beckey, R. W. Craig and another made the first ascents of Kate's Needle on August 6th and Devil's Thumb on August 25th. D. W. Brown turned back with Wiessner when the latter was in-

jured soon after landing from the Stikine River boat. These two spectacular granite peaks rising out of a glaciated plateau along the Alaska-Canada boundary are visible from the Inside Passage by sea, and from all sides by air. Twenty-five or more of our members attended the A.C.C. camp in the Bugaboos the last two weeks of July, where in brilliant weather some first-class climbing was enjoyed on the fine rock peaks, approached over the glaciers and snowfields. In the Coast Range, the Mundays and Hall climbed Mount Reliance (10,500 feet), 15 miles down the E. Homathko River from Tatlayoko Lake. The Kauffmans, and just before them T. Baker and L. Erskine of the Harvard M.C., tried to reach the highest peak of the Battle Range in the Selkirks, by the N. E. arm of Arrow Lake and the Incomappleux River valley. Many members climbed in the Wind River Range, Cascades, Rockies, Sierras and elsewhere, and A. Carter in Chile. C. S. Houston took men experimentally to pressures higher than Mount Everest in a pressure chamber at Pensacola Naval Air Station.

HENRY S. HALL, JR.,
Secretary.

ANNUAL MEETING

The 44th Annual Meeting of the Club was held at the Cosmopolitan Club, 122 East 66th Street, New York, on Saturday, 7 December 1946, at 2.15 P.M. President Case presided. There were 45 members at the start, 55 by 2.45 P.M., about 60 at the close, and nearly 80 in the room for the illustrated talks afterwards.

The reading of the Minutes of the previous Annual Meeting was, on motion, voted waived.

The Secretary read his Annual Report, which was voted approved.

The Treasurer's Annual Report, which had been sent to all members, was, on motion by Gilman, duly seconded, voted approved.

Miss Buck read her Librarian's Annual Report.

Bates and Robertson spoke of plans for the *Journal*—the War Extra to appear early in 1947, and the regular 1947 issue to appear in March or April. Case spoke appreciatively of Thorington's continuing as editor until the new editors returned from the war to take over during 1946.

Gilman reported for the Planning Committee. He said that about 100 members had returned the questionnaire. Results were somewhat inconclusive, perhaps because most members had insufficient information on which to base considered answers to some of the questions asked. There was some discussion on formation of sections. It was announced that the Council had voted that members residing in California are authorized to form a Sierra Nevada Section, and that members residing in Washington and Oregon are authorized to form a Cascade Section. This is to be done under the existing by-laws.

Case made a general statement about Dr. Ladd's offer to the Club, for a club house, of a fire house at 113 East 90th Street. He described the house and said that a condition of the gift is that the members raise, before 30 August 1947, not less than $35,000 as an endowment to run it. He said that the house would be open for inspection the next day. House moved a vote of thanks to Dr. Ladd. This was seconded by Spadavecchia and carried. Case asked the Secretary to convey the thanks of the meeting to Dr. Ladd.

House reported for the Mountain and Winter Warfare Committee. He had previously made two excellent reports to the Council on his visit to Camp Hale in August, and in general on his opinion as to the mountain training program and its likely future, with various recommendations. The instruction cadre of the Mountain Training Center at Camp Carson, about 70 strong, had been training units of the 38th Regimental Combat Team. Caleb Gates, our Central Vice-President and Chancellor of Denver University, is very much interested in the possibilities of an R. O. T. C. mountain unit at Denver University, or in approaching the matter through the National Guard. The Committee will stand ready to give what help it can. House asked members who would be willing to give good books on mountaineering to the Mountain Training Center to send them to Mrs. Cowles in Colorado Springs. She will see that they reach the proper officer at Camp Carson. Wood said that it is often harder for officers than for civilians to get ideas of merit accepted. W. L. Putnam suggested that members might volunteer to give illustrated lectures at the Mountain Training Center. To summarize, the Club's Committee on Mountain and Winter Warfare will continue to do all it can to the end that a mountain training program be continued indefinitely.

Thorington, Chairman of the Nominating Committee, reported as follows:

OFFICERS FOR 1947-49

President	Lt. Col. Walter A. Wood, Jr.
Vice-Presidents:	
(Eastern)	Charles S. Houston, M.D.
(Central)	Mrs. Elizabeth S. Cowles
(Western)	Weldon F. Heald
Secretary	Bradley B. Gilman
Treasurer	Joel E. Fisher
(Assistant Treasurer)	(W. B. O. Field, Jr.)
Councillors:	
(1947)	Robert H. Bates
	William P. House
	M. Beckett Howorth, M.D.
(1947-48)	Miss Lillian Gest
	Maynard M. Miller
	H. Bradford Washburn
(1947-49)	Edward Cushing
	Henry S. Hall, Jr.
	Roger S. Whitney, M.D.

It was moved by Miss Hurd, seconded and carried that the nominations be closed, and that the Secretary be instructed to cast one ballot for the slate as read. This was done, and they were declared duly elected.

Case announced that Henry S. Hall, Jr., had been made an Honorary Member of the Club by the Board of Directors.

Field asked for a summary of the activities of the Research Fund. Fisher reported, among other things, that aid had been given to members and others toward glacier studies and measurements during 1946 in Alaska, the Sierra Nevada and the Alps. Mrs. Orcutt expressed thanks to Fisher and Heald for their work and interest in the Research Fund.

Hall spoke of Case's very valuable work as Chairman of the Mountain and Winter Warfare Committee from 1942 to 1946, most of which by its very nature could not be made known to members during the war. He referred to his constant contact with high officials and officers on various levels, and with the General Staff in Washington, and with the officers and men of the Mountain Troops at Camp Hale and elsewhere.

House moved, and Field seconded, that a Committee on Conservation be appointed. Hall recalled that this was a field in which

the Club had been more or less active 20 or more years ago, and that there were in it pitfalls which should be approached with caution, although he approved in general. The motion was carried.

Thorington spoke of a gift of 25,000 francs to the Swiss Alpine Club by the late Dudley Wolfe, for glacier research.

Hall thanked the members for their support of the Secretary since 1933, and said that he very much hoped to be able to continue the contacts with members which he had enjoyed more than anything else during the last 13 years. He said that letters from Dr. Hickson and several others had been received, expressing their regret at being unable to attend.

Gilman moved a hearty vote of thanks to John Case as retiring President. This was carried with applause.

On motion by Fuller the Meeting adjourned at 3.30 P.M.

After a short interval there were three illustrated talks.

Sterling B. Hendricks, of Washington, told with unusually fine colored movies of his party's visit to the Northern Selkirks last summer. The film showed crossing the Columbia in a rubber boat, travelling through heavy forest, high camps, glacier travel, ascent of Mount Sir Sandford.

Miss Margaret G. Finlay, of Montreal, showed good colored films of the A. C. C. camp in the Bugaboos last summer.

Miss Evelyn Runnette, of Denver, showed Kodachromes of the Colorado Rockies, in summer and winter, and of Camp Hale. The pictures gave a very representative, and probably to some a surprising, impression of the types of country and of the climbing and skiing opportunities there.

The afternoon program ended at 4.45 P.M.

ANNUAL DINNER

The Annual Dinner was held the same evening at 7 P.M., also at the Cosmopolitan Club. There were about 185 present, of whom 75 were members. Dr. Gaebelein said the blessing.

President Case reviewed the events of his term of office and spoke particularly of Dr. Ladd's very generous offer to the Club of a building suitable for a club house, the gift being contingent on the Club's ability to raise a minimum of $35,000 as an endowment toward its operation. He then called on his successor as President, Lt. Col. Walter A. Wood, Jr., who thanked the members for electing him and went on, with well chosen words, to outline his

ideas for the Club's future. Hall read a telegram just at that moment received from our member in Regina, Herbert E. Sampson, who is also Honorary President of our good friends the Alpine Club of Canada.

Dr. Charles S. Houston gave a highly interesting account, sprinkled with delightful bits of humor, of pressure chamber tests conducted by him on volunteer Naval personnel last spring at the Naval Air Station, Pensacola. The men were "raised" to 29,025 ft. over a period of days, but at sea-level temperatures. The most interesting finding was that, as far as altitude is concerned, Mount Everest may well be climbed eventually without the use of artificially supplied oxygen.

Lt. Col. Walter A. Wood, Jr., showed—its first showing—the film taken on the Canadian Army's "Exercise Musk-Ox" last winter. The film in black and white (more suitable for this subject) and with sound accompaniment gave for the first time a sight and sound impression of travel in the great white, mostly flat, empty spaces of the far north: men and machines in blizzards and drift at 45 below zero; stops at isolated R. C. M. P. posts and Hudson's Bay Company stores and mission stations; the Eskimos, some of whom had never seen men's machines on the ground or in the air; air support; crossing the ice of Coronation Gulf and Great Bear Lake; then turning south and into spring, and crossing rivers during the break-up, and finally moving along the dusty Alcan Highway—a very fine pictorial record of a unique and highly successful expedition.

Maynard M. Miller then told of the Harvard Mountaineering Club party's successful assault on Mount St. Elias by its great S. face. Illustration was by colored film and slides. The party was aided by air-drop of supplies and equipment by planes of the U. S. 10th Rescue Squadron, stationed at the time at Yakutat Bay. Mr. William Williams, who had attempted the mountain in 1888, from this side also, was present. In the background of the picture of the party on the summit appeared Mount Logan, 30 miles to the north. Mr. Albert H. MacCarthy, who led the successful party on the only ascent of that great peak, in 1925, was also present.

The program ended just before midnight—rather long but certainly, all told, afternoon and evening, one of our best in years.

HENRY S. HALL, JR.,
Secretary

REPORT OF THE TREASURER

November 1, 1945 to October 31, 1946

Receipts:		
Dues:		
1 @ $200 (life)	$ 200.00	
17 @ 15	255.00	
187 @ 10	1,870.00	
56 @ 5	280.00	$2,605.00
Dividends and Interest		672.59
Royalty on Handbook		109.45
Sales:		
AAJ, various years	$ 302.05	
Handbook	46.75	
Purcells	125.75	
Guide Book	82.85	
Palmer Books (duplicates)	20.30	577.70
Contribution		1,000.00
Sale of 10 shares General Gas & Electric Co. 5% pfd. stock		994.00
Total Receipts		$5,958.74
Disbursements:		
Rooms		$1,647.44
Library Maintenance	$ 449.52	
Library Acquisitions	172.04	621.56
Dinner (1945) net cost		76.92
Miscellaneous (printing, postage, etc.)		591.99
Publication AAJ	$1,075.31	
Publication Purcells	971.94	
Publication Annals	154.93	
Publication Handbook (in stock)	41.59	2,243.77
Purchase of ½ share International Business Machines Stock		98.25
Purchase of 30 Ice Axes and 30 Pairs Crampons (duty and freight, totalling $301.70, contributed by Treasurer)		523.32
		$5,803.25
Balance, November 1, 1945:		
General Account	$1,701.45	
Library Endowment Fund	71.45	
Club House Fund	9.34	
Reserve Fund	26.71	
Edward Whymper Fund	21.27	$1,830.22
Add Receipts, Nov. 1, 1945 to Oct. 31, 1946		5,958.74
		$7,788.96
Less Disbursements, Nov. 1, 1945 to Oct. 31, 1946		5,803.25
Cash Balance, Oct. 31, 1946		$1,985.71

Balance, October 31, 1946		$1,985.71
Distributed as follows:		
General Account*	$ 661.85	
Library Endowment Fund	71.45	
Club House Fund*	1,003.34	
Reserve Fund	227.80	
Edward Whymper Fund	21.27	$1,985.71

Securities Owned, October 31, 1946		*Cost*	*Market Oct. 31, 1946*
10 shares	American Telephone & Telegraph	$ 1,646.85	$ 1,657.50
15 shares	Union Pacific, preferred	1,519.28	1,612.50
10 shares	Eastman Kodak, common	1,976.85	2,080.00
13 shares	International Business Machines	2,125.10	2,717.00
100 shares	Corning Glass Works	2,500.00	2,700.00
150 shares	Taca Airways	918.75	487.50
40 shares	General Electric Co.	1,967.24	1,580.00
$13,000	Par U. S. Series G (of which $400 are held as reserve against publition of next list of members)	13,000.00	12,800.00
$2,150	Par U. S. Series F	1,612.50	1,650.00
		$27,266.57	$27,284.50

Not reflected in above figures are:
Furniture and equipment in Club Rooms
Stock of *American Alpine Journals,* 1929-1946 inclusive
Guides to the Rocky Mountains of Canada
Purcells; Miscellaneous publications and extra copies
Library, insured at $10,000

*Gross balance in Chase National Bank, Oct. 31, 1946:	
General Account	$ 661.85
Club House Account	994.00
Research Fund	455.86
	$2,111.71

Respectfully submitted,

JOEL E. FISHER,
Treasurer.

REPORT OF THE LIBRARIAN

1 November 1945 to 31 October 1946

Greater use of the Library was made in 1945-46 than at any other time in its history. Many visitors, members and non-members, sought information concerning mountain regions and various aspects of alpine climbing. Telephone calls from young and old (ages ranging from 15 to 98) were numerous. There is no doubt that Mr. Ullman's novel, *The White Tower,* has aroused much general interest in mountaineering.

The Library Committee has catalogued hundreds of pamphlets and other material hitherto unclassified. We have also prepared a

detailed inventory of the many pictures and souvenirs which adorn the club rooms, with notes in regard to items of particular interest. Mr. Walsh and Mr. Field of the Map Committee have labored hours over the maps. Most of them have now been classified and indexed in such a manner it is hoped that members can find readily the maps wanted.

We acknowledge with many thanks the donations of books, photographs, framed pictures and all other material contributed by Dr. Thorington, B. Brown, F. Farquhar, J. James, U. Corning, Dr. Ladd, J. E. Fisher, D. Gardner, H. S. Hall, Jr., H. Burton, H. Mills and J. Oberlin. We are very grateful to Mr. Ullman for his most useful gift of the new Funk and Wagnalls Standard Dictionary.

The total number of volumes in the Library is now 4265, including the bound volumes of journals and pamphlets. Bookcases and shelves are overflowing—we are looking forward eagerly to those happy days when proper space will be provided for the contents of our Library.

HELEN I. BUCK,
Librarian

IN MEMORIAM

WILLIAM WILLIAMS
1862-1947

William Williams was born in New London, Conn., on 2 June 1862, a son of Charles Augustus and Elizabeth Hoyt Williams. He was a descendant of William Williams who signed the Declaration of Independence. A bachelor, he died in New York City on 8 February 1947, at the University Club, where he had lived since 1899.

During his early education (1873-76) at Sillig's School, Vevey, on the Lake of Geneva, he acquired his fondness for mountaineering, at the age of 13 making an ascent of Monte Rosa with his father. He received an A.B. from Yale in 1884, and his LL.B. from Harvard in 1888. During most of the next 12 years he was in the law office of Simpson, Thacher and Barnum, New York City. After 1900, except when he was holding government posts, he was engaged in private practice. In 1892 he served as junior counsel in the Bering Sea arbitration proceedings with Great Britain; and he was Commissioner of Immigration, Ellis Island, 1902-05 and 1909-13, and Commissioner of Water Supply, Gas and Electricity for the City of New York, 1914-17.

At the outset of the Spanish-American War, Williams joined Squadron A (cavalry), but was transferred to the quartermaster's department in Puerto Rico, being commissioned a major. In World War I he was a lieutenant colonel of ordnance, 1918-19. Since 1916 he had been a vestryman of St. Bartholomew's Episcopal Church; and he was a trustee of the Presbyterian Hospital and the Seamen's Church Institute. His clubs included the Down Town, Metropolitan and Union. *American Lawn Tennis* recently listed him as one of the four oldest active tennis players in the world, as he played at Nantucket, Mass., in the summer of 1946.

Williams joined the Alpine Club (London) in 1882 and, becoming senior American member on the death of Justice Holmes (1935), was elected to honorary membership. He joined the American Alpine Club in 1921, and his extensive climbing record is given in full in our published lists. After 1885 his visits to the Alps were only occasional; his ascents, however, include the traverse of the Drus (1889, the second ascent of both peaks in a single day), Aiguille Verte, Mont Blanc (twice), as well as major peaks of the Oberland, Eastern Pennines and Bernina. In the Eastern Alps he

had ascended the Ortler and Gross Glockner. He made three ascents of Piz Bernina, once in winter and once by a new route (1885) from the Tschierva Glacier via Fuorcla Scersen-Bernina. In Ecuador he reached the summit of Pinchincha, and in Colorado he climbed Longs Peak.

In 1888 he joined H. G. Broke and H. W. Topham on their expedition to Mount St. Elias, the first to attempt this mountain, gaining an elevation of 11,400 ft. on the S. ridge, an account of which he wrote for the *American Alpine Journal* (1942) as well as for publications of earlier date (*Scribner's,* April 1889; *Alpine Journal,* August 1889).

His figure will be missed at the dinners of the Club, which he regularly attended, being present at the meeting of December 1946, to hear the account of the first complete American ascent of Mount St. Elias, 58 years after his own experience. J. M. T.

HERSCHEL CLIFFORD PARKER

9 July 1867-12 March 1944

In 1905 a kind fate led me to the smoking room of a westbound Canadian Pacific train.* The only occupant was a man whose physical and facial characteristics were so unusual that I was instantly drawn to him.

In the first meeting, which covered an hour of animated talk, I found that my fellow traveller's name was Herschel C. Parker, that he was the head of the Department of Physics at Columbia University and that he possessed a fanatical zeal for difficult mountain ascents.

In subsequent meetings he stated that he was planning an expedition to climb a fabulous Alaskan mountain that had just come into popular ken through an article in the New York *Times* written by W. A. Dickey, a young Princeton graduate who had seen the great peak from the Susitna Valley and named it Mount McKinley. As I had seen the mountain from the Kenai Range and was familiar with conditions in Alaska, he asked me to join his venture. The chance meeting thus ripened into a friendship that carried us through many strange scenes and adventures and lasted until his death, 40 years later.

* Reprinted, with the permission of the editor, from *The Explorers Journal,* Autumn 1946-Winter 1947.

In attempting to enumerate his fine qualities and to list his achievements, I am forced by lack of space and factual data to confine my remarks in large part to the outdoor side of his life. His scientific achievements were real and important but due to his modesty and my own poor memory for dates and details, I lack the information necessary for listing them correctly. Suffice it to say that a detailed and authentic list of his varied activities would form a valuable and fascinating biography.

Herschel Parker's love of mountainteering was awakened by early excursions to the White Mountains. He had an intimate knowledge of the range and in his long rambles along its crests and valleys began to exhibit the ability for speed and sustained effort that carried him over the difficult ascents of later years.

While of less than average weight, he combined a physical elasticity with a steadfast courage and a love for remote areas that led him irresistibly to the great mountains of the West. Under the tutelage of two famous Swiss guides, the Kaufmann brothers, he began his final training in climbing techniques and made first ascents of such redoubtable peaks as Deltaform, Hungabee and Lefroy in the Canadian Rockies. He was a member of the party on Mount Lefroy when Abbot lost his life.

In the early years little was known about the country surrounding the larger peaks, and most of the pioneering climbs consisted of explorations of high valleys and passes with packhorses or on foot. Following rushing torrents and penetrating canyons or strips of virgin forest brought to him a new and fascinating sensation. Exploration! Achievement based on mountaineering skill and knowledge, but far broader in its scope than the conquest of a single mountain.

The lure of traversing wild and unknown areas began to dominate his mind; and Mount McKinley, aloof in its far northern wilderness, became the lodestone that drew him.

His first expedition to Mount McKinley, in 1906, was attempted through the vast stretches of muskeg and forest that lay to the south of the Alaskan Range. While the party reached the southern icefields of the great mountain, the effort had expended too much time; but the difficulties overcome and the experience gained served only to whet his indomitable spirit.

Following his first Alaskan venture came a year of rest. In 1908, in company with the writer, a trip was made into the moun-

tains of the Olympic Peninsula; and a first ascent of the highest peak, Mount Olympus, was successfully accomplished.

The summer of 1909 was spent in prospecting for gold among the fiords and glaciers of the Valdez region. Preparations for a second expedition to climb Mount McKinley were under way, and survival and travel techniques for glacier climbing were tried out and perfected.

The 1910 expedition accomplished several important things, but perhaps the most important to the cause of exploration was the securing of the evidence that ended the polar controversy. The controversy threatened to undermine the public faith which the great explorers had earned down the ages. Into this cause Herschel Parker threw himself with the selflessness of a crusader, and the complete establishment of the Peary Expedition's claim to the sole discovery of the North Pole was due in no small part to his high-minded efforts.

The third attempt on Mount McKinley in 1912 was Herschel Parker's last expedition into the Alaskan wilderness. On this climb, when only a few minutes' walk from the goal he had given so much to reach, he was robbed of his dream by the elements. Napoleon said that no general was great until he had conducted a successful retreat. In defeat, Herschel Parker's character shone the brightest. He knew that the attempt would be his last; and, as he turned his back on the mountain to begin the long journey to the Yukon, he said, "Perhaps I wanted it too much, but at least I had the privilege of trying."

Despite the hardships he had endured, Alaska was in his blood; and for several years he threw in his lot with the northern prospectors and worked at new discoveries in the Talkeetna region south of Mount McKinley. During his last years he lived in southern California, where he labored on experiments in locating and isolating precious metals.

Herschel Parker was a member of many clubs and societies, but those that he loved best were those where he could meet informal groups of active men such as gather at the Explorers or American Alpine Clubs, or the Salmagundi. He was a devoted and loyal member for many years of The Fresh Air Club, which consisted of a group of men who made weekly walks through the rough hills of New Jersey or clambered among the rocky walls of the Hudson River.

Back of a slightly austere manner lay a great capacity for friendship. His aid to less fortunate friends was constant. Many people will remember him with affection and gratitude.

He was a collector of note and possessed many objects of rarity and beauty. These he donated to museums during his last years. His interests ranged from art and archeology to exploration and scientific research.

The towering snow slope over which men pass to the summit of Mount McKinley bears his name. Few men possess a grander headstone.

He died at Los Angeles, Calif., on 12 March 1944. He was buried in Inglewood Cemetery.

B. B.

[Herschel Clifford Parker was one of the original members of the American Alpine Club. Further biographical data may be found in J. Monroe Thorington, "American Alpine Club Annals. Part I," *A. A. J.*, VI, 109-111.—*Ed.*].

ANDREW MORRISON TAYLOR

17 October 1875 — 13 May 1945

"Well-known Alaskan 'sourdough,' big
game hunter, guide and mountaineer."

His parents were born in Scotland (1839), and came to Canada about the time of the War between the States. He was the seventh of nine children, six boys and three girls. His family was socially prominent and financially well off. His father owned a fine residence, a farm, a business and a yacht, and was the Grand Master of the Free Masons of Canada.

Andy, as a youth, was a restless soul and left Ottawa for the West in his early teens. He inherited his father's fondness for the outdoors, particularly shooting, but because he did not wish to finish his schooling properly he drew his father's disapproval. He went to work for an Ottawa firm on the Columbia River, and became an expert river man. He could paddle and pole a canoe as well as any New Brunswick guide. For a while in the early '90's he was on the upper Columbia and was "Captain" of the S. S. *Pert,* a small naphtha launch, by the time he was 20 years old.

By 1897 he was pilot and engineer of the principal Stikine River steamer. About this time he was one of the crew hired to take a flat-bottomed, stern-paddle-wheeled steamer to Skagway. Caught in a storm, they were wrecked on "Bushy Island." He and the rest of the survivors had a difficult time, for they lost a lot of their supplies. However, they managed to haul the boat out, whip-sawed planks, patched her up and made their way back to Wrangell. While they did this they lived mainly on young geese. At Wrangell they re-outfitted, as far as the goods they needed were obtainable, and went on to Skagway. For a while he engaged in packing outfits over the White Pass with horses.

He arrived in Dawson in 1898, and this became more or less his headquarters until 1913, when he moved to McCarthy, Alaska.

In 1898-99 he went down to Fort Yukon and from there to Point Barrow with supplies. He told me that it was on this trip that he learned from the Esquimaux about the handling of dog teams. What route he took, I do not know, but he told me once that he had crossed the Endicott Mountains in winter, and it may have been on this trip.

A year or two later he started from Dawson in the early fall with a partner and the usual homemade barge loaded with grub, dogs, etc. They travelled up the Pelly River and probably the Macmillan River, following some branch of it to its head, and crossed the divide, going down the Twitya River and Keele River to the Mackenzie River. This would be about 460 miles from Dawson as the crow flies, and about 100 miles S. of the present Norman Wells. They spent the summer prospecting to the S. of the Keele and W. of the Mackenzie, and in late summer they moved back up the Keele taking a S. fork, crossed the divide S. of their former route, and kept going S. to the Pelly, which they descended to Dawson. Andy said he had not heard of this being done before nor since.

Another fall and winter he travelled up the Big Salmon River and down the Nisutlin River to Teslin Lake, and thus back to Dawson via the Teslin River.

But he soon discovered his favorite ground, the White River, and came to know it and its watershed thoroughly. Thus he became valuable to the survey parties of the International Boundary Commission with which he spent several seasons as heliographer. He also handled their pack trains and supplied them with meat.

ANDREW MORRISON TAYLOR
1875 - 1945

A. M. T. AND JOHN BURNHAM, 1940

In the White River region he had several claims, and two cabins on White River, one on Rabbitt Creek and another at Canyon City, where he worked the ground from time to time. He first went to Canyon City about 1900.

In June 1913 Andy was on Bonanza Creek, a tributary of White River in what is known as the "Shushanna" country (spelled on the USGS maps "Chisana"). That year he was associated with William James, "North Pole" Nelson and a Mrs. Wales, who had come in the year before and built a cabin. Together they discovered important placer deposits and staked out claims. As they needed equipment, Andy and Nelson went out to Dawson during the summer, and word got out of this strike. A stampede ensued called the "Shushanna Rush." It lasted until the summer of 1914, and several thousand went into that area.

Andy returned from Dawson and worked his claim. As the gold field was developed, McCarthy in Alaska became the main base for supplies, so at that time Andy moved his residence to that town. Most of the supplies were freighted from McCarthy by way of Skolai Pass. During this period Andy undoubtedly made many trips over this route. An account of this mining activity in which Andy's name is mentioned is in USGS Bulletin 630, by S. R. Capps, pp. 89-92.

Andy is said to have made and thrown away three "fortunes." He once came back to Dawson with a suit case full of gold dust and nuggets (about $150,000.00). The first thing he did was to visit the bar of the man who had grubstaked him. Paid his debts, bought more supplies, then celebrated for a couple of days and gave away, threw away and spent his share of the gold.

For a while he was known humorously as "The Mayor of Canyon City," but as far as I can make out this was after it had become a deserted mining camp. But he still kept a well stocked cabin there and brewed and bottled "very good beer." On occasion he visited the place with a hunting party which he had led, and coming in from the back country would treat the party to his own brew which he dug from a hidden cache, much to their delight after days of pent-up thirst in the wilderness.

After moving to McCarthy he alternated between working at the Kennecott Mines, prospecting on his own, and taking out hunting trips on which in the '20's he usually was in partnership with Bob Boyden, who handled the horses and packs. Thus he came

to know the Chitina and its drainage basin. His familiarity with this country made him the logical man to pilot the Mount Logan expedition on its approach to that mountain. For a number of winters he took the mail into Shushanna (Chisana) country by dog team.

During his outfitting and hunting days he guided many men and women from "the outside" on successful trips after big game. Among them were lawyers, bankers, business men, doctors, biologists, scientists, engineers and mining men of note. That firm friendships with many of these were established, and lasted for years, is attested by his correspondence, and by the fact that after he left Alaska and came to live in Putnam County, N. Y., many came to visit him or invited him to their homes. Not less significant is the fact that his correspondence with his friends in Alaska was even more intimate and lasting.

Mr. John Burnham, of New York, who himself had known the Yukon and the Klondike in the early days, and had had many exciting adventures along that river, did not meet Andy until 1919 in the White River Country. As he states in his *The Rim of Mystery* (G. P. Putnam's Sons, 1929), "The high opinion I then formed of his personal qualities and qualifications has been in no way diminished by after events. He is an expert hunter, horseman, dogman, and boatman, resourceful in wilderness emergencies, and withal a gentleman."

Because of this estimate of the man, he chose Taylor above all others for his companion on his expedition to the Chukotsk Peninsula of Siberia to try to find and identify the Big-horn of that region. The area was then under Bolshevist rule, and the trip was not without risk and great adventure. In his preface Burnham says, "Taylor was at any time ready to stake his life on a sporting proposition. All he required was that it appealed to his sense of good sportsmanship. Where a friend and comrade was involved the answer was easy. His was the fine honor that is the flower of manhood."

Later he and Taylor thoroughly covered the Mount McKinley Park region and to the E. beyond. During the years of residence in Putnam County he was always included in the select group of Burnham's friends who made their annual trek to his home camp near Westport, N. Y., for a week's camaraderie. In the Explorers Club, and then with the members of the Camp Fire Club of America, he was at home and among friends.

In 1927 and 1928 he went out with Mr. F. H. Moffitt of the USGS, making geological investigations for the Government. The first year they travelled from McCarthy up the Chitistone River into the Skolai Basin and back down the Nizina Glacier; the second year, from McCarthy to Strelna over the old Nizina Trail. They were camped at the mouth of the W. fork of the Nizina when Skolai Lake broke out under the Nizina Glacier and flooded them out.

Taylor's first mountaineering experience at high altitude was with the Mount Logan Expedition. The use of the ice-axe and the rope was entirely new to him, but he was one of the best judges of snow and ice conditions I have ever met. He instinctively knew good and bad terrain, scenting it as an experienced wild horse senses the hidden, treacherous ground that will bog him down.

On that mountain trip he formed a deep friendship with Allen Carpe, and it was through the latter that I came to know Andy when Carpe asked him to join us on our first Fairweather trip.

Andy liked climbing, particularly snow and ice work, but he did not like rock work as the mountaineer knows it. In spite of many rough rocky scrambles in search of big game, he did not feel sure of himself on sheer rock. I have often found this the case with hunting guides.

Following the first Fairweather trip, in 1926, Taylor participated in the first ascent of Mount Bona, 1930; Mount Fairweather, 1931; the search for Carpe's and Koven's bodies on Mount McKinley, 1932; Bradford Washburn's crossing of the St. Elias Range, 1935; and Oscar Houston's attempt on Mount Hayes, 1937.

Just prior to these last adventures, he accompanied a group of mining engineers in the exploration of copper mining possibilities in the region of Illiamna Lake and the Chigmit Mountains. He accompanied Sherman Pratt and W. B. O. Field, Jr., in their glacier studies of Prince William Sound, and the latter in glacier studies of Glacier Bay.

In 1929 Andy accompanied Dr. E. A. Park and myself on a prolonged pleasure cruise of the inland waters of the Panhandle of Alaska, Glacier Bay, Lituya Bay, Yakutat and Disenchantment Bays. It was on this trip that Andy became "a member of the family." He took entire charge of two boys and two girls in their early teens, instructing them in hunting, canoe work, and the ways

and means of living in the outdoors. No finer or more beloved companion could be found for either children or adults.

As one looks back upon almost 20 years of association with Andy, there are many remarkable qualities that stand forth.

He loved children and was beloved by them. They instinctively came to him, turned to him and trusted him. This was true of children everywhere—those in Alaska and in the States. He never let them down, and his influence with them was thoroughly fine.

The same fine sense of integrity made him a loyal friend to people in all walks of life. Whether a man had money or influence meant nothing to him. He accepted the person as he was, and his judgment of him was based on the man himself, not his appurtenances.

He was one of the best read men I have met, and his books and "library" in Alaska circulated freely among his friends. He was well informed in history and literature. On occasion I have sat with Andy, listening to discussion on other subjects than the outdoors between eminent educators, lawyers, or others, when a point in question of fact would arise and be referred to Andy. He nearly always knew the correct answer. For years he received the best novels and historical biographies regularly from commercial sources in the States and from friends. These he read, and he remembered their contents. He wrote a fine hand, and I do not remember a misspelled word. His composition was excellent. I begged Andy to sit down and write of his experiences. But only a few scanty notes on the back of an envelope or sheet of scrap paper remain. He was always going to write, but never did. I believe he thought that what he had to contribute was of no interest or value. He was full of interesting and humorous anecdotes, and despite his hesitancy of speech, at times was a most amusing raconteur.

He was quick at repartee. Once at a fish and game club meeting at which I was present, he was introduced with a flowery speech and the statement that he had saved the doctor's life in the Alaska wilds. One of the audience called out, "Andy, did you save Doc's life?" "Sure I did," replied Andy, "I made him pancakes every morning and kept him from starving to death."

I believe he packed a couple of old *Saturday Evening Posts,* a few "funnies" and a biography or historical novel up every moun-

tain and on every hunt he took. Mr. Moffitt recalls that once when he sent Andy out for supplies he brought back some supplies and a load of books, and forgot the mail! On the Fairweather trip I remember he alternated between the funnies and Shakespeare (in one volume). The *Iliad,* the *Odyssey* and the Bible were favorites which he read over and over. He was not religious or superstitious. His favorite card games were cribbage and poker. He excelled at these but rarely played for money, and despite his keenness for prospecting, playing for stakes added little or nothing to his zest for the game.

Andy was generosity itself. He gave away nearly every cent he ever earned to those of his friends who were in straitened circumstances from time to time. I never knew him to borrow or run up debts. His personal possessions were almost nil except for a good knife, rifle, camera, and outdoor clothing and a great many shirts. When a shirt became soiled it would go into his "sack," and he would buy a new one. When he was moved to send them to the laundry he would usually get back twenty. His personal habits were very clean. He shaved every day, no matter what the temperature, weather conditions or altitude, and usually without a mirror, and did a good job of it. He was a very good barber.

Never have I met a more even-tempered man. He had great patience, and I never saw him flustered by sudden or unexpected events. He made decisions quickly, and his judgment was nearly always vindicated by the turn of following events. The outdoors, the wilderness if you will, was his home and he had the "know-how" to live there and in relative comfort. He was a good cook. He could get a large loaf of bread to rise and bake it to perfection over a campfire in the most perverse weather conditions. He had a remarkable sense of direction and could keep his course true through the deep forest for miles with no landmark visible, and not get turned around no matter what deviations immediate obstacles might force upon him.

On coming to Putnam County, Andy was somewhat at a loss at first in the life on the farm. He always hankered after Alaska. I remember the first year he was there: when it came time to gather sap for making maple syrup, he chose to do it with a horse and pack saddle equipped with the usual alforcas made of kerosene tin cases—two tins to a side—and to bring the sap in that way.

While with us he made several trips back to Alaska; and once he took one of my boys to Maine, where they took a canoe trip into the back country.

Andy died as he had lived, without fear, cheery and uncomplaining and planning what next we would do together, always thinking of others. In his last illness many of his old friends—a Senator from Washington, a doctor from Johns Hopkins, and others—came from afar to see him. Loyalty begets loyalty.

Taylor's ashes are laid in the cemetery at Cold Spring-on-Hudson, and from the place one can look out across to Storm King Mountain and Bull Hill. He didn't care much where he was to be buried, but he thought that a pretty good association. A boulder from the glacial drift of the region marks the spot. It was placed there by some of his mountaineering friends and bears a bronze plaque which reads: "To a Mountaineer, Friend, and Comrade in the Wilderness."

W. S. L.

It is said that a trail or a camp is the best place for testing the endurance of congenial disposition and friendly companionship, and especially is this true when the test comes under trying, disagreeable conditions.

Of all my companions on the trail in the mountains, no one withstood that test better than my loyal friend Andrew M. Taylor, with whom I spent a total of six months in our campaign and conquest of Mount Logan in the Yukon during 1924 and 1925.

Although inexperienced in some of the technique of climbing and the use of the ice-axe and rope, Andy's years of experience as a hunting guide in the Alaskan country made him an apt pupil; and, when he was once convinced of the wisdom of a method for doing things, in his quiet unassuming way, he soon qualified as a teacher and frequently was able to improve the methods.

On many occasions during these three trips in from McCarthy to Mount Logan, it was his quiet example or suggestions that brought our parties safely through delicate situations and solved many a difficult problem, for he was a veritable "wheel horse" of the party during our reconnaissance in 1924; then again during the winter freighting trip, with temperatures down to 55° below zero; and finally on the assault, the climbing, and the return journey off the mountain and back to civilization.

Every member of our party was indebted to him for the reassuring effect of his quiet, friendly manner as he went about his job and helped others with theirs.

I feel sure I speak for all members of the Mount Logan party when I again say that to Andy, more than to anyone else, belongs the credit for the successful conquest of Mount Logan.

A. H. MacC.

HOWARD FREDERICK JOHN LAMBART
1880-1946

On 12 January 1946 our valued friend of mountaineering days, "Fred" Lambart, left his home at Ottawa on his last great adventure, and true to his sturdy nature, without fear or question; for he had lived an active, useful life in the broad alpine areas of Western Canada, closely in touch with the glories of nature, and had often expressed a faith that there must be a wondrous world beyond the curtain of this life where a weary soul wracked with physical infirmity might find rest and refreshment.

Lambart was born in Ottawa, the son of the late Honorable O. H. Lambart and Mrs. Lambart, of Vine Lynne, New Edinburgh. He received his early education in the public schools of Ottawa and later at Ashbury College and McGill University, where he received his Bachelor of Science degree in 1904.

After working on the pioneer surveys of the Grand Trunk Pacific Railway, he entered the service of the Geodetic Survey Branch of the Canadian Department of the Interior in 1905 and, as a Dominion Land Surveyor, began his lifelong work in the Topographical Survey Branch of that Department. During the succeeding 28 years his work in the field took him on foot, by rail and by air over large alpine areas in Western Canada, conducting pioneer surveys for the government in rugged terrain where he came to grips with many outstanding peaks. Especially was this true during his seven years of work in locating and monumenting the 141st Meridian, which serves as the boundary line between Canadian and United States territory along the border of Alaska and Yukon Territory.

The broad experience gained during those years of strenuous work in the mountains eminently qualified him for the difficult task of designing and selecting appropriate equipment and supplies for the Mount Logan Expedition on which he acted as assistant leader; and it was largely through his work in this connection, and his great

strength and endurance in the field, that the largest known mountain mass in the world, after 23 days of strenuous effort from its base, was successfully climbed. On that summit the party reached the center of the greatest known glaciated alpine area on this globe.

Fred had many commendable attributes in his character, but to me his outstanding one seemed to be his ready desire to bear a little more than his share of any burden on the trail or in camp. This trait, together with his enthusiasm for the success of our hazardous adventure, was most forcibly demonstrated on Logan's interminable slopes on the ascent to the 18,000-foot plateau: he stubbornly insisted upon breaking trail far beyond his allotted stretches. In that rarefied atmosphere and deep snow, this action on his part took a heavy toll on the strength of his powerful body while it conserved the strength of the rest of our party, and that seemed to give him much satisfaction.

But there is a limit to the punishment the most powerful physique can endure. After six very exhausting days of heavy exertion in back-packing, battling with deep snow, fierce winds and low temperatures, and the final ascent and retreat from the two peaks just under 20,000 feet elevation, the ascent of the icy slopes of Hurricane Hill in a blizzard sapped the last bit of strength Fred's body had so generously been giving all along the line. Upon finding him and Andy Taylor missing at the 18,500-foot camp site, two of us returned to the Hill and there found Fred prone, with his face buried in the snow crust, in a state of exhaustion. Andy was on the rope end, 50 feet ahead, standing braced against the violent storm.

Although he was completely spent, Fred's mind was alert to the great danger of the situation; and he begged me to leave him and to go on with the others, for he felt that, in his condition, he would endanger the safety of the rest of us. This was the first time such a murderous proposal had ever been made to me, and I confess that the shock of it provoked me into using some violent language to force Fred into renewed exertion. After some rest and a little help, the summit ridge finally was made and a lee secured.

Now that Fred is gone, I feel that his friends should know of this incident, so that they may fully realize the extent of his devotion and fidelity toward his fellow-men—an inspiring exhibition of the qualities all too rare in this rushing, competitive world of ours, but possessed to a high degree by our departed friend, Fred Lambart.

A. H. MacC.

JOHN DENISON BALDWIN
1902-1946

"Dan" Baldwin, who died in Sydney, Australia, on 26 September 1946, was the first president of the Harvard Mountaineering Club, in the winter of 1924-1925. Until recently he had been a member of the American Alpine Club, which he joined in 1925.

Born in Worcester, he attended Worcester Academy and Milton Academy, and graduated from Harvard with the Class of 1925. He subsequently entered the investment business. He was an early aviation enthusiast, one of the first residents of Worcester to own his own plane. He was also an enthusiastic fisherman, and in 1936, off Sydney Heads, Australia, caught with rod and reel a shark weighing 996½ pounds, then a world's record. He was a strong swimmer and was made an honorary member of the Life Guards at Sydney—a high honor for a foreigner.

His mountaineering was limited to two fair seasons in the Alps and to scattered climbs elsewhere. His pleasing personality and infectious enthusiasm were important in bringing together the first group of climbers at Harvard, and in launching there the club which is still going strong today.

When I visited Australia in 1937, he characteristically came down to the dock at Sydney to meet me, and took me to his house, and then up into the Blue Mountains, where we had a very pleasant three days. The day I left, he and his wife were entertaining for the American Consul General, the late J. P. Moffat. His first wife died a short time later. He married again and leaves his second wife and a son, John D. Baldwin, Jr., in Sydney. His sister, Charlotte, widow of Sydney Webber, lives in Worcester and is a member of the Club.

Dan was a likable, genial and friendly person. He was invariably good natured and not easily ruffled by anything. He often came back to the early meetings of the H. M. C. after leaving college, and continued his interest in it and its members for years. Though he had not been in this part of the world for some time, except for an occasional brief visit, the impression he had made in earlier years was fine and lasting. The news of his untimely passing will be received with sorrow by his considerable group of friends of the earlier years hereabouts.

H. S. H. Jr.

WALTER SHERMAN GIFFORD, JR.
1917-1944

Walter Sherman Gifford, Jr., was born on 15 December 1917 at Washington, D. C. He was educated at Buckley School, New York City; The Fessenden School, West Newton, Mass., where he made a record by being the head of the school for three successive years, and was one of the editors of the *Albemarle,* the school paper; Phillips Exeter Academy, where he was a member of Cum Laude Society and graduated with honors in 1935; and Harvard, where he graduated *cum laude* in 1939. He was president of the *Harvard Monthly* during his junior and senior years, and a member of Signet Society, the Harvard Mountaineering Club and the American Alpine Club.

After graduating from Harvard he went into newspaper work, joining the newspaper *PM* in New York as a junior writer at the time when the paper started.

His sports were skiing, tennis, squash, pack trips, fishing and mountaineering. As a member of the H.M.C., he went in 1938 on the Club's expedition to the Chugach Range in Alaska. In 1939 he enjoyed climbing in the Tetons. He had a wide range of intellectual interests, and one of his particular hobbies was photography.

He entered the Navy on 2 December 1941 as Ensign, was promoted to Lieutenant (j.g.) on 1 October 1942 and became a full Lieutenant a year later. He was killed in a plane crash at Funafuti Atoll in the Pacific on 31 July 1944. He was posthumously awarded a citation by the Secretary of the Navy "for outstanding performance of duty while attached to the Division of Naval Communications, from December 19, 1941 to July 31, 1944. Carrying out his important work with skill and initiative, Lieutenant Gifford rendered invaluable assistance in fulfilling the obligations of the Division of Naval Communications throughout a critical period in the history of our country. By his professional ability and devotion to the completion of an exacting assignment, he contributed to the prosecution of the war and upheld the highest traditions of the United States Naval Service."

W. S. G.

WALTER SHERMAN GIFFORD, JR.
1917-1944

WILLIAM SHAND, JR.
1918-1946

WILLIAM SHAND, JR.
1918-1946

Über allen Gipfeln
Ist Ruh',
In allen Wipfeln
Spürest du
Kaum einen Hauch;
Die Vögelein schweigen im Walde.
Warte nur, balde
Ruhest du auch.

GOETHE

William Shand, Jr., was born on 5 October 1918 in Lancaster, Pa. He attended the Lancaster public schools and Franklin and Marshall Academy, and prepared for Princeton at Phillips Academy, Andover, Mass., where he excelled in studies and athletics, graduating second highest in his class, in 1936. At college he majored in chemistry and continued to win scholastic honors. He was elected to Phi Beta Kappa in his junior year and delivered the valedictory address when he graduated, *summa cum laude,* in 1940. From Princeton he went to the Graduate School of the California Institute of Technology as a Fellow in Chemistry. During World War II he was associated with the Office of Scientific Research and Development in Panama, the Southwest Pacific and the Philippines. He received the degree of Doctor of Philosophy from the California Institute of Technology in June 1946, for his studies in physical chemistry; and, on 1 July 1946, he was appointed Instructor in Molecular Physics at the University of California, Berkeley. One month later, on 11 August 1946, he lost his life in an automobile accident near Elko, Nev.

Bill's climbing career demonstrated his unusual ability. Although he was still young when his life was terminated, he combined remarkable insight with much experience. His search for adventure and perfection began in 1935, when he spent the summer in the Alps. Here he made a few guided climbs in the Gross Glockner group and led many guideless climbs in the Totes Gebirge. This trip stimulated his interest, and he returned in 1937 to lead extensive guideless climbing in the Bavarian Alps. During this period he made a solo ascent, traverse and descent of the Zugspitze group in one day. In 1938 he led the climbing of a group which surmounted various peaks in the Bernese Oberland, the Valais and the

Dachstein group. In all these climbs he contributed a keen grasp of route finding and the inspiration of exceptional leadership.

During the last six years, much of his available time was spent climbing in the Canadian Rockies and in the mountains of Western America. In 1940, the year in which he became a member of the American Alpine Club, he led numerous climbs in the Tetons. It was at this time that he led up the Southwest Ridge route, and the North Wall chock stone of the Grand Teton. He was invited to join the 1941 Hall-Washburn Mount Hayes Expedition, and on this expedition he led the first ascent of Mount Bagley. With such experience, Bill acquired a rare ability to climb on snow and ice.

His presence at the California Institute of Technology provided an opportunity to join the Sierra Club of California. As a member of the Rock Climbing Section, he participated in many winter and summer climbs on Mount Whitney, assisting in leading. In the Yosemite Valley, he participated in the pioneering of new routes and new ascents. He also gave instruction in rock climbing to those less gifted.

All his friends—a group which constantly increased—remember him for his kindness, his courtesy and his scholarship. But his fellow-climbers appreciate also his mastery of rock and snow techniques and mechanics, his helpfulness and his leadership. Those who knew Bill Shand feel that they have known a man who embodied the qualities which make a "mountaineer."

B. G. F.

BOOK REVIEWS

Mountain Holidays, by Janet Adam Smith. 194 pages, with two maps and 32 additional pages of illustrations. London: J. M. Dent and Sons Ltd., 1946. 15/-.

Janet Adam Smith, like her husband, Michael Roberts, is known to many readers on both sides of the Atlantic, but perhaps to comparatively few of them as a mountaineer. Reviewing *The Ascent of Fó* for *The Criterion* (January 1937), she showed in at least one comment the sort of special knowledge that few non-climbers would have; she contributed an essay in Alpine history to *Grand Tour,* edited by R. S. Lambert (New York, 1937); in a wartime issue of *The Listener* (23 November 1944), she had a pleasantly nostalgic essay entitled "Return to the Hills." Now, having before us a whole book that reflects both her tendency to read and write and her tendency to go among the hills, we have occasion for great rejoicing.

The mountain holidays began in Arran, "The April Island." There, for years, the author's family spent Easter; and there, to her and to many other young friends, the late W. P. Ker showed the way to the hills and communicated a feeling for them. Later by several years came her first visits to the Alps. They seem to have been natural—almost inevitable: her father had known Zermatt in the '80's and had met her mother at the Riffel Alp, and Professor Ker went to the Alps every summer. There were also crossings of the four great passes in the Cairngorms. Then, in 1934, Janet Adam Smith discovered "New Ways in Savoy," climbing with Michael Roberts and the guide Othon Bron of Courmayeur. With them we enjoy the happily recurring summers, marred only by the news in 1938 of Othon Bron's death on the Col du Géant. We make some classic ascents—the Matterhorn, the Grépon, the Dent du Requin (what a good day that was!*); we learn also of the sweet, memorable pleasures to be found in the less trodden Graians. Plans to visit the Val d'Isère at the first opportunity begin to form themselves in our minds. Aiguille Pers, Grande Sassière, Tsanteleina, Pélaou Blanc—these names become familiar to us; and so do the people of

* A view that the two editors of this journal may be permitted to express with some feeling when it is explained that they were there on the same day with André Cachat.

the country, and even some of the feelings that we ourselves might expect to have there. Something of the Robertses' own manner of enjoying the hills is suggested by a chapter heading—"The Alps without a Suit-Case"—and by the account of the schoolboys and masters who found (thanks to the Robertses, be it said) "that mountaineering was not just a rich man's game."

The not exactly unexpected interest in books and pictures and people—even, at times, in towns—reinforces the reader's wish that *Mountain Holidays* did not have to end. Janet Adam Smith is likely, for instance, to have the *Chartreuse de Parme* or *The Golden Bowl* in her sack; and she tells us why she likes to read Stendhal and Henry James "in the intervals of a mountain holiday." She finds herself suddenly in a scene known to her from a recently acquired drawing of the Mer de Glace in 1781 by Francis Towne—one of the many artists and writers whose past experiences in the mountains have enriched her own. She introduces such arresting figures as M. Florian, mayor of Tignes; and M. Flandin, who did not like to be beaten at Polish draughts and who found Flaubert's *Trois Contes* "not very nice"; and Max Costa, who would leave the Val d'Isère in winter to work as an electrician at the Odéon. There are longer associations with Professor Ker, and Othon Bron ("toujours souriant," said one of the press cuttings, "et à la lèvre, toujours la blague"), and William Empson, whom we overhear on one occasion, in the Félix-Faure refuge, chatting about propositions of the form *A is B*. There is also, of course, Michael Roberts himself, with his villainous black hat—"Mais voici," protested the gendarme who demanded passports at Bellegarde, "quand on voit un type comme ça avec un chapeau comme ça . . ." The *type* with the hat, who is reported by his wife to be rather fond of "a nice French row," is by no means lacking in regard for other things French: " 'I should like,' he said, dealing out the second bottle of red wine, 'to give my name to a village square somewhere in France. The Place Michel-Robert needn't be very large, and the villagers needn't remember why they named it after me. It'll do if one of these days they answer, when asked who Michel Robert was: "Un zèbre quelconque." But there must be plane-trees, and a café, and the sound of someone playing bowls.' "

Read *Mountain Holidays*. It is most delightful. And perhaps we shall be meeting one day in the Val d'Isère? D. A. R., Jr.

Alpine Ways, by F. S. Smythe. 106 pages. London: Adam and Charles Black, 1945. 15/-.

This is a reissue of the sixth of Mr. Smythe's picture books, first printed in 1942 in a small edition that like all English wartime editions was overnight unobtainable. Camera in hand, Mr. Smythe again conducts us along a familiar route from Austria to Savoy. But though the views are known ones, they have the freshness that to infatuated eyes is characteristic of mountain scenery. In his preface, Mr. Smythe apologizes for this "defect" in his book. "As a mountaineer," he writes, "I have been too often a centrist (and) can only illustrate a few districts ranging from Eastern Tyrol to Mont Blanc." One replies that the variety and charm of these few districts—to which Mr. Smythe has in fact by no means always confined himself—is inexhaustible, and that Mr. Smythe underrates his own artist's instinct for the unfamiliar aspect of a familiar scene. There are 47 full-page photographs reproduced in *Alpine Ways;* and only two of them, both winter views of the Matterhorn, fall in the class of camera clichés, lack the individualizing angle of vision, play of light, or emphasis of detail, that marks the others.

Alpine Ways is first and last a picture book; the text serves merely as an introduction to and commentary on Mr. Smythe's photographs. It is adequate to this purpose, but one would have been grateful for the photographic data—choice of stops, length of exposure, etc.—that the author-artist supplied in at least one of the earlier books in the series. Incidentally, now that another of Mr. Smythe's publishers is bringing out a "Uniform Edition" of his mountaineering writings, could not A. and C. Black be persuaded to reprint the earlier picture books, long out-of-print?

E. C.

La Connaissance de la Montagne, by Paul Payot. 127 pages. Bonneville: Imprimerie Plancher, 1944.

This little volume was published as a compendium of the instruction material used at the Centre à l'École des Cadres. Although directed principally at the more youthful mountaineer, it can be read with profit by all. It is unfortunate that, owing to the wartime conditions under which it was published, eight chapters and some 48 illustrations had perforce to be omitted. These chapters, "Mountain Conditions," "The Alps and the Pyrenees," "Weather Fore-

casting," "Orientation in the Mountains," "The Evolution of Technique, Artificial Aids," "Alpine Bibliography," "Principles of Mountain Photography," and "Some Alpine Terms" would have made the book more complete.

One would not expect to find within the confines of this slender volume the wealth of material contained in the two-volume *Manuel d'Alpinisme* of the Club Alpin Français, but M. Payot has done an excellent job of condensation and has placed the essentials of the craft of mountaineering before the beginner. That the book is principally directed toward the beginner is borne out in the contents of the first two chapters which cover "Descriptions of Mountains" and "The Appeal of Mountains, the Value of Mountaineering." The latter chapter is a rather brief apologia for climbing and seeks to justify the sport from the standpoint of health and character building. Perhaps such justification was needed in France under German occupation; but few climbers, at least, will concede that such justification is necessary.

Discussion of equipment is divided into two chapters, one on personal equipment and one on climbing equipment. Only about three pages are devoted to personal equipment, and of this amount a page and a half are devoted to a list of the equipment needed by either a mountaineer or a skier-mountaineer. This chapter is not, therefore, likely to start any lively controversies on the type of equipment recommended, but conversely it offers little assistance to the beginner. The other chapter on "Matériel and Its Use" is rather more complete but covers a mere five pages. We were glad to see that woven ropes were discouraged.

"Alpine Dangers" are rightly accorded considerable space, although many will complain that snow avalanches are not fully enough discussed.

The next four chapters on "The Organization of a Climb," "Leading a Climb," "Roped Travelling," and "Shelters, Huts, and Bivouacs" cover the general functions of a leader and give much valuable information on the technique of travelling in the mountains.

As might be expected, the principal emphasis is on the technique of rock climbing. To this phase some 16 pages are devoted and many illustrations. Despite this, the treatment is neither intensive nor extensive. The fundamentals are briefly covered but such things as the layback, for instance, are not too well described for a beginner. There is no mention of the various piton manoeuvres

that come under the title of rock engineering, an omission which will be received by many with surprise.

The chapter on ice and snow also briefly covers the fundamentals of snowcraft but omits many of the refinements. Very soundly, indeed, both this chapter and the preceding one devote considerable attention to belays.

Winter mountaineering is covered quite briefly as is also hygiene. Considerable space, however, is devoted to "Accidents and First Aid" and "Mountain Rescues." While the latter is distinctly worthwhile, the former appears rather too extensive for the rest of the book yet not sufficiently extensive to be a good first aid manual.

The format is extremely good and the paper rather better than might be expected of a wartime book. The printing, however, is not well done, and the reproduction of some of the pictures leaves much to be desired. Unfortunately, the binding is poor, a single stitch in the center sufficing to hold it together—for a time.

While the book will not be used as a reference work, it is written in easily understandable language; and we can heartily recommend it to those who wish to acquire a mountaineering vocabulary in French and considerable information at the same time.

K. A. H.

Night Climb: The Story of the Skiing Tenth, by Frank Harper. 216 pages. New York: Longman's Green, 1946. $2.50.

Night Climb: The Story of the Skiing Tenth is listed by its publishers as a factual novel which "compresses many stirring episodes in the history of the colorful Tenth Mountain Division into the life of a single platoon." That the book is factual or a real novel most of its readers will deny, but it does picture many colorful experiences of the Tenth Division. Some may find the book thrilling, for the descriptions of the division training in this country are not badly drawn, but anyone who knew the division overseas will be annoyed at the author's blending of facts and imagination.

Night Climb is poorly organized and proceeds by fits and starts. The achievements of the Tenth are highly praised, as they should be, but the book's emphasis is unsound. For instance, the action of the 86th Infantry on Riva Ridge, the central action of the book, was a gallant undertaking; but its connection with the rest of the Italian Campaign is apparently misunderstood by the writer. Nor

does he seem to recognize the purpose of the Tenth or, for that matter, the use of mountain troops. The "Skiing Tenth," as the division is lovingly referred to, wasted much of its early training doing downhill skiing—very pleasant, of course, but with little military value. But mountain troops are no more ski troops than ice-axe or piton troops. They are troops who must know the fundamentals of mountain travel, a fact some of the Tenth learned the hard way in Italy. During the war no downhill skiing was used in combat by units of any army, and yet *Night Climb* is largely a glorification of military ski training.

One could be unkind about many episodes in this book: the unreal talk of the German prisoner, the relief of the 5th Army units at Vidiciatico, the killing with a bow and arrow of a solitary German skier who happened to be well behind our front lines. Obversely this journalistic work is full of clever dialogue and picturesque sketches of many well known skiers in the division, whose high calibre and morale is well emphasized. Weir Stewart is also a real and appealing figure, unlike some members of his platoon. High praise of skiing and the mountains appears throughout, very pleasant to hear. In fact there is no quarrel with the purpose of the book, but the purpose of the division and its fine achievements are apparently misunderstood by a writer whose work is not based on firsthand experience.

R. H. B.

Pioniere der Alpen, by Carl Egger. 371 pages, with 24 portrait drawings. Zürich: Verlag Amstutz, Herdeg & Co., 1946.

Here are presented 30 biographies of notable Swiss guides from Melchior Anderegg to Franz Lochmatter, forming an outline of mountaineering history through somewhat more than a century. Those familiar with Carl Egger's entertaining *Aiguilles,* and his later work on the Caucasus, know that the author is always interesting. He has quite evidently read the *Alpine Journal* from end to end, proper preparation for the compiling required in the work before us. The new volume is divided into four parts: (1) The Beginning. A section largely concerned with early attempts and successes on the Jungfrau, Finsteraarhorn and lesser peaks. (2) The Golden Age. Coincident with the founding of the Alpine Club and terminating (arbitrarily) with the ascent of the Matterhorn, this period of conquest among the outstanding Swiss peaks brings to the fore the guides of Meiringen, Grindelwald and Lauterbrunnen, who

outdistanced their compatriots of the Valais and Engadine. Melchior Anderegg, Christian Almer and the Taugwalders are remembered names. (3) The Second Generation. The men of this era came upon the Alps when few of the higher summits were still untouched, but Alexander Burgener, Peter Knubel, Ferdinand Imseng, Aloys Pollinger and Christian Klucker had still new ridges and unscaled faces on which to prove themselves. (4) Guides Abroad. Often beset with homesickness and ailments sometimes imaginary, these men are yet not forgotten in distant ranges—Himalayas, Caucasus, Andes.

The 24 portraits drawn by the Zermatt artist, Emil Aufdenblatten, from contemporary photographs, are unequal in value, but those of Melchior Anderegg, Peter Knubel, Martin Schocher and Christian Klucker seem done to the life.

J. M. T.

In the Rain and the Sun, by the Rt. Hon. L. S. Amery, C. H. 238 pages. London and New York: Hutchinson & Co., Ltd., 1946. 21/-.

A sequel to *Days of Fresh Air**, this is essentially an account of the author's travels outside of England since 1914. The several chapters are devoted pretty exclusively either to mountain climbing by the author, or to his travel over every part of the British Empire. The climbing chapters include two ascents of the Rothhorngrat, the traverse of the Mischabel, the Meije, an attempt on the Zmutt Ridge, several of the well known Chamonix Aiguilles, and a season in the Julian Alps, as well as climbs in New Zealand and Canada. The climax is his account of his ascent of Mount Amery, named for him, in the Canadian Rockies. It is interesting to note that the author always climbed with professional guides, and he surely is to be commended for his ability to accomplish successfully long ascents with almost no preliminary training, at almost every age in his life, an ability much envied by the reviewer, as well as for his admissions of frequent defeats on peaks which he coveted, about which we are not all so frank.

Aside from the mountaineering interest in such a book, it provides a peculiarly valuable historic record of the progress of British Empire policy, coming from a man so intimately associated with that policy between the two World Wars. He cites so many individuals

* Reviewed in *A. A. J.*, IV (1941), 292.

by name, all over the world—individuals whom he or Mrs. Amery met on their many travels; and he diplomatically focuses attention on every single one of these many acquaintances by also listing every one of them in his twelve-page index.

Digressions on the origin of the name Amery and the origin of the title of the book—the titles of his earlier *Days of Fresh Air* and of this book together make up one line of his school poem (Harrow); a strong recommendation for mountain troop training; frequent references to his favorite classical poets; and occasional discussions on the philosophy of the mountain climber, together with an exceedingly easy reading style, and light weight of paper stock, all commend the book to the public as well as to the climber.

J. E. F.

Guide du Skieur dans les Alpes Valaisannes, by Marcel Kurz. 2 vols. (I, du Col de Balme au Col Collon; II, du Col Collon au Monte Moro.) 2nd edition. Club Alpin Suisse, 1939.

Marcel Kurz's ski guide to the Valais covers the finest country in the Alps for the mountaineer who wishes to combine climbing with Alpine skiing. The scenery is magnificent and the range of possibilities almost unlimited, including many high-level traverses, of which the most famous is the high-level route from Bourg St. Pierre to Zermatt, and mountain ascents on both ice and rock of all degrees of difficulty. The season is long, at least extending from January to June—the best month for the skier usually being May, when the crevasses are relatively safe and the spring snow is in good condition.

It cannot be too strongly stressed that travel in this area requires mountaineering experience and skill. The skier who is interested mainly in the sport of skiing, but who wishes to see something of the high mountains, should choose in preference districts like the Silvretta, the Bernese Oberland or the many districts in the Eastern Alps where mountaineering problems and danger are infinitely less.

In this connection Marcel Kurz writes in his preface as follows:

"The title of this guide may mislead those who are not sufficiently warned. In using the map attached to the volume, one will see dotted routes leading to summits where no one will go on ski. Neither the map nor the text which accompanies it is intended to lead the ski sportsman to snow fields where he may abandon him-

self to the thrill of downhill running. In the high mountains the ski ceases to be a plaything. Circumstances make it a tool—the most useful aid to the winter mountaineer—but a simple tool intended to make travelling easier—something which we put on or take off like crampons and which is only a means to an end, to lead us to the summit of the mountains which were formerly denied us.

"This guide is then designed for the mountaineer whom winter has turned into a skier. It is certainly easier for a mountaineer to become a skier than for a skier to turn himself into a mountaineer. The technique of skiing can be learned in great part from manuals which have been written on the subject, but that of the mountaineer can only be acquired through experience in the course of many expeditions under the direction of licensed guides or competent companions."

This second edition has been brought up-to-date and greatly expanded. It follows the form of the first edition, the most important part of the guide being the Siegfried 1/50,000 map on which all routes are marked and numbered. Arrows indicate those portions of the routes which are exposed to avalanche danger. The map itself gives a reasonable idea of the area in which crevasses may be dangerous. It should be kept in mind that crevasses are constantly changing and that the map cannot be relied upon as to details. A solid line marks the routes which can be followed on skis, and dotted lines the places where under normal conditions it is necessary to proceed on foot.

The explanatory text, which in the first edition was very brief, is now all that can be desired, dealing particularly with deviations from summer routes and the dangers which may be encountered at different times of the year.

There are two most valuable additions, a number of aerial photographs showing the routes, and a series of reproductions from a new map of Switzerland of certain areas, the topography of which was incorrectly shown on the Siegfried map.

The guide is intended to be used in connection with the regular Valais guide of the Swiss Alpine Club, which deals with the region at much greater length, but which is intended for the summer mountaineer.

Marcel Kurz was one of the pioneers in the ski conquest of the Alps. From 1907 on he skied and climbed year by year in the Valais. His great experience and skill as a mountaineer combined with his profession, that of topographical engineer, make him the ideal editor for a guide of this kind. The guide itself is a model

for future authors and fills the requirements of the Alpine skier to perfection.

J. C. C.

Driftwood Valley, by Theodora C. Stanwell-Fletcher. 369 pages and 15-page appendix; illustrated. Boston: Little, Brown & Co., 1946. $4.00.

An account of two whole years in a cabin some hundred miles northeast of Hazleton, B. C., *Driftwood Valley* is primarily a beautifully reported study of wild life in that area; it is also an excellent treatise on living in that country, summer and winter, and on the habits of the native Indians.

Possibly the true attraction of this book can best be conveyed to the reader by a few lines picked here and there from its text:

> Oh-h-h—the cry of the Pacific loon; like a woman crying hopelessly, endlessly; like a baby bear who has lost its mother; like the faint, far-off foghorn of a ship at sea; like the mournful sigh of wind in a pine tree . . .
> Above all things, perhaps, the wilderness teaches patience and endurance . . .
> There is a secure way of life—all manner of help and of care for us if we use the wilderness rightly; work with it, not against it . . .
> The loyalty of dogs, and the patience of horses, are very big and touching things . . .
> Of all people we know, we envy these Indians most; for they are free as very few left on this earth are free . . .

Toward the end, as a record of their achievements:

> It is rather wonderful that the most intelligent of all our wild companions (the wolves), have reached tolerance towards us . . .

And in discussing the damaging upsets to the balance of nature where man has tried to modify the principle of the survival of the fittest, the author asks, almost in despair, "Is man's instinct of chivalry towards the weak, unfit ones, *really* a sign of progress and wisdom, or isn't it?"

If only a better map of the area had been included, it would have made the many beautiful word passages even more personal to those who have more than a passing acquaintance with the country. And if it does seem to the reviewer, from his own recollections of having once passed the year round outdoors in British Columbia,

that there is something of exaggeration in the impression derived from the text of such continuous extreme winter cold, of such great depth of snow all winter long, of such continuous difficulties on the trail, in no event do there appear to be any directly inaccurate statements—only a minor undercurrent to achieve a rhetorical effect, perhaps fairly permissible in such a well written book.

In the description of the Indians, even the New York subway rider will be amused to find that they too "alkalize," for one learns that they call Alka Seltzer "the medicine, he jump in water"—and think it wonderful!

I can recommend this book to all who are fond of the Canadian country, with the assurance that they will not put it down until they have read every page and admired every illustration.

J. E. F.

Mountain Photography, by C. Douglas Milner. 237 pages, 135 photographs and many diagrams and graphs. London and New York: The Focal Press, 1945. 19/6.

The work of one who is evidently not only an experienced photographer but a competent and enthusiastic mountaineer, the scope of this exceptionally worthwhile book is well expressed in the opening sentence of the Introduction: "This book tries to bring within one compass something of the varied applications of photography to the world of mountains."

Illustrated by superb reproductions of prints by many noted mountain photographers, and a large number of graphs and diagrams, and with a well written and discriminating text, based on the wide experience of the author, the attempt has been crowned with complete success. A particularly worthwhile book has resulted.

It is difficult to think of any aspect or problem of mountain photography which has not been clearly and helpfully treated. The approach is scientific throughout but never too much so, and the author does not waste space with ordinary matters of photographic dark room or printing technique. The book is notable for the helpful character of its many diagrams and graphs and for the aptness to the text of the many splendid photographs. It ends with an up-to-date bibliography and an adequate index.

F. N. W.

VARIOUS NOTES

United States

A Night on Rainier. The first post-war ascent of Mt. Rainier was made on 31 May 1946 by M. M. Miller, Dee Molenaar and C. M. Molenaar, as a "conditioning climb" for their activities on Mt. St. Elias in June and July. The trio made the ascent on the first day of the 1946 season via Camp Muir and Cadaver Gap, going on to the summit on the upper Ingraham Glacier. The plan was to make some preliminary tests of equipment to be used in Alaska. For that reason permission was obtained to remain on the summit overnight. In late evening a storm hit the 14,000-ft. level and compelled the group to take refuge in one of the crater ice caves melted out by slowly emitted volcanic steam. Two attempts were made to get out of the crater and descend to a lower level, out of reach of the storm. Winds of over 100 miles per hour drove the party back to the cave. But, with sleeping bags soaked inside and sheathed in ice outside, the party found it imperative to force its way down to Muir the next afternoon, having experienced conditions infinitely worse than those encountered on any of its combined 19 previous ascents of the mountain and than any of the wind conditions later encountered in the St. Elias Range.

M. M. M.

Nooksack Tower: First Ascent. Nooksack Tower (8500 ft.) is a very prominent upthrust on the E. ridge of Mt. Shuksan, somewhat resembling in position the Aig. Noire de Péteret on Mont Blanc. The climb has repulsed attempts since 1939.

On 5 July 1946 Fred Beckey and Clifford Schmidtke left camp (3000 ft.) on the N. fork of the Nooksack River and by a previously reconnoitered route reached the bergschrund at the foot of the final N. face (6500 ft.) at 10.30 A.M. Schmidtke worked over the bergschrund, and Beckey kicked steps 800 ft. up a 50° ice couloir on the N. face. Snow conditions were dangerous, and occasional rock falls harassed the party. The climbers then worked westward into a hidden rock trough and donned tennis shoes. The final 1200 ft. involved fourth-class climbing along the north arête. Care and continual belaying were necessary. One safety piton was used. The pair reached the summit at 3.30 P.M. and then had an uneventful descent, rappelling from pitons placed in the rock wall at the flank of the couloir. They reached camp in the valley at 10 P.M.

F. B.

Golden Horn: First Ascent. On 18 September 1946 the first ascent of Golden Horn (8400 ft.) in the N. E. Cascades was accomplished by Fred Beckey, Keith Rankin and Charles Welsh. The approach was from Horseheaven Camp, ten miles from the Hart's Pass Road, via the brushy valley of the upper W. fork of the

Methow River and a long talus gully on the W. side of Golden Horn. The final summit rocks were short but required a spectacular tennis-shoe climb. The time from camp was six hours.

F. B.

Mountain Activities of the Sierra Club, 1946. During the summer of 1946 the 42nd Annual Outing of the Sierra Club travelled for six weeks through the high Sierra Nevada, covering the finest and highest portions from Cottonwood Pass, S. of Mt. Whitney, to Piute Pass at Mt. Humphreys, far to the N. Most of the more interesting peaks along the route were ascended by different members of the party. An average of 100 people participated in each of the three two-week periods. The three leaders, R. M. Leonard, D. R. Brower and Raffi Bedayn, are members of the A.A.C. Other members present were Marjory and Francis Farquhar, Weldon Heald, Helen Le Conte, Bob Lipman and Harriet Parsons.

The Sierra Club Base Camp, organized and managed by Oliver Kehrlein, had a total attendance of 145 at two sessions of two weeks each. Camp was made in the high country of the Fourth Recess of Mono Creek. This camp is similar to the mountain camps held by mountaineering clubs throughout the world. A fine location is established about one day's pack from roadhead, and the surrounding country is thoroughly explored. The High Trip, on the other hand, is unique in permitting the members to move to new country every second or third day, and thus to explore by pack train remote wilderness areas that are inaccessible by any other means.

D. R. Brower was the organizer of the two-week "cache and carry" system of Knapsack Trips along the 13,900-ft. Kings-Kern divide of the Sierra Nevada, and among the glorious mountains of Grand Teton National Park. By careful planning in advance, food caches are established to permit high country off-trail exploration by knapsack, with loads not exceeding 20 pounds.

The other trips sponsored by the Sierra Club are the Burro Trips and the Saddle Trips. The Burro Trip is primarily for the purpose of instructing lovers of the wilderness in the technique of independent wilderness travel, doing all that is necessary to pack and care for a small pack train. Three of those trips indicate the enthusiasm with which people desire to learn. The Saddle Trip is the most luxurious of all, appealing particularly to those who love horses. Since all members are on horseback, a greater range of country can be covered than by other means.

R. M. L.

Wind River Outing of the C. M. C. The Colorado Mountain Club held its 33rd Annual Summer Outing in the upper Dinwoody

Canyon of the Wind River Range, 3-18 August 1946. Eighty persons participated, including members not only of the C. M. C. but also of several Eastern clubs. Seven of the 80 are members also of the A. A. C.: J. V. Ambler, R. C. Black,III, M. B. Howorth, Lt. Col. A. H. Jackman, Mary Merrick, Evelyn Runnette and Carl Blaurock.

Trips were scheduled daily to the various peaks and points of interest of the region. Most of the major peaks were climbed at least once, including Turret, Warren, Dinwoody, Pinnacle Ridge, Sphinx, Gannett, Koven, Bastion, Helen and Fremont. Among the spots visited chiefly for the views and photographic possibilities were Horse Ridge and Klondike Lake. As usual on C. M. C. Outings, the less experienced participants—ordinarily the majority—were led to the principal points of interest by designated club leaders, while small groups of capable members undertook the more unusual trips and sportier climbs. A new route up Koven by the N. ridge was climbed by two separate parties, and a new route was made also on Bastion.

C. A. B.

Wind River Range, 1946: Gannett-Dinwoody Group. Nearly 200 climbers and skiers visited the Gannett Peak Camp in upper Dinwoody Canyon during the 1946 season. In August, which proved to be the popular climbing month, 80 attended the Colorado Mountain Club Outing, which was held during the first two weeks, and 38 participated in the first Annual Outing of the Chicago Mountaineering Club, which opened immediately afterward. From the camp owned and operated by Floyd Wilson near the Dinwoody and Gannett Glaciers, climbers were able to reach the highest peaks in the range within a comparatively short hiking period. Except for Mt. Doublet, ascents were reported on all the near-by major peaks N. of and along the Continental Divide.

A great deal of attention has been given to Gannett Peak, the highest in Wyoming, but no new routes were reported. Between 20 and 30 parties reached the summit, most of them by the well known route which begins at Dinwoody Glacier and passes around the "Goose Neck" on the upper E. ridge. One party of 30 (C. M. C.) completed the ascent by this route, with Carl Blaurock and C. A. Peregrine leading. At least seven parties made long traverses of the peak from the Gannett Glacier over to the Dinwoody side.

One important climb, probably a first ascent, was that of the Bear's Tooth (12,200 ft.) from North Dinwoody Canyon by Don Winterborne and Robert Parker. After overcoming several difficulties on the N.E. face and reaching the top, they used an easier route toward the W. for descent. This striking peak is well known to residents of the Wind River Valley, although its name does not appear on either the forest or the topographic map.

First ascents were made of the three "English Dames," the most imposing towers on the Doublet-Warren ridge, by Hans Kraus and Roger Wolcott. The W. tower, nearest Doublet, proved to be the most difficult of the three—grade six.[1] One pitch of 30 ft. was artificial. The middle tower was somewhat easier—grade five. A rusty piton part way up the third tower indicated a previous attempt by unknown climbers. Delphine Wilde joined the party on the ascent of the third tower. The traverse of the three "English Dames" was made on 15 August 1946.

A number of new routes were reported also on the following peaks:

Mt. Theodore Koven (Peak 8). A N. face and ridge route was made by Charles Grant, Jerry More and Horace Van Valkenburgh. This route, with variations, was used by several later parties. A S.-N. skyline traverse was followed by Robert Parker, Gibson Reynolds and Phil D. Smith.

Rampart Peak (Peak 9). Two ascents of this peak were reported, the earlier being a snow and ice climb from the N.E., and the second an ascent of the precipitous E. face by Charles Grant, William Farrell and David Ragle. The latter climb led directly from the upper Gannett Glacier to a point just N. of the summit cairn.

Bastion Peak (Peak 10). Apparently two different routes were employed in ascents of the N. face—one by a C. M. C. party led by A. H. Jackman, another by a Chicago group led by Joe Stettner.

Mt. Woodrow Wilson. A new ascent of this peak was made by Hans Kraus, Roger Wolcott and C. Harrison Snyder on 20 August 1946. The ascent was by way of the sheer S. face (central rib) from a camp on Upper Titcomb Lake. The climb was reported as a difficult grade five. A traverse from the summit of Woodrow Wilson N. across Pinnacle Ridge to the Gannett saddle was completed by William Farrell, Phil Smith, Jr., Rodney Smith and Phil D. Smith.

The Sphinx. A second ascent of the very airy S. or skyline ridge was made by Hans Kraus, Delphine Wilde and Roger Wolcott on 11 August 1946, from a bivouac on upper Dinwoody Glacier. A partially new traverse, beginning near the S. end of the E. face and ending at the N.E. foot of the peak, was reported by Robert Parker and John Speck. Reaching the crest of the

[1] For this note, additional data on the "English Dames," Mt. Woodrow Wilson, Sphinx and Mt. Helen have been supplied by Roger Wolcott. The system of grading difficulty is that used in the Alps and Dolomites. Roughly, grade three is moderate rock climbing; grade four is difficult, the obvious point at which one wishes to change from boots to sneakers; grade five is very difficult; and grade six is considered the hardest that can be climbed. A detailed description of the climbs appeared in *Appalachia* for December 1946.—*Ed.*

S. ridge involved several problems for the party, because of a scarcity of cracks for protective pitons. A direct descent of the N. face to the glacier was prevented by the bergschrund. To avoid this obstacle a long traverse E. above the glacier was necessary.

Turret Peak and Mt. Warren. Some variations may have been added to the established routes which start from the saddle connecting these peaks. An ascent of Turret from the saddle (Elsie Col) was made during a severe snow squall by John Speck, Paul Stettner and Edmund Lowe in late August. The descent was by approximately the same route. Earlier in August, George MacGowan, Jack Hossack and Phil Dickert encountered steep icy overhangs on Mt. Warren and finally made the ascent by climbing over black ice on the N.E. face.

Mt. Helen. A new ascent by the steep N.W. ridge was made by Hans Kraus and Roger Wolcott on 4 August 1946, from a camp on Upper Titcomb Lake. This ridge seen in profile is high and precipitous. The route was reported as grade five in difficulty.

A number of peaks not so well known as those listed above were climbed early in the season by camp employees in order to round out needed information on the region. "Sunbeam Mountain" (13,200 ft.), between Turret and Horse Ridge, bore evidence of at least two previous climbs, as did the East Sentinel (Heapsteep Mountain, 12,300 ft.), which stands half a mile W., overlooking Dinwoody Glacier. Peaks 11 and 12 (Flagstone, 13,200 ft., and Pedestal, 13,100 ft.) bore summit cairns but no records. Downs Mountain (13,344 ft.), climbed by Roger Beck and Gibson Reynolds in late August, possessed neither cairn nor records, but a long pole on top indicated a visit by a survey party several years ago.

Good skiing conditions prevailed throughout the season on the Gannett Glacier, where 3000- to 3500-ft. slopes were available in June and early July. Clifton Taylor served as ski guide and instructor. Climbing guides included Don Winterborne, Robert Parker and Phil D. Smith.

P. D. S.

Appalachian Mountain Club, 1946. The Appalachian Mountain Club resumed most of its pre-war activities during 1946. The mountaineering training provided by local rock climbing, which had to be sharply curtailed during the war because of a dearth of competent leaders and the transportation difficulties, was recommenced on a large scale; and many one-day and weekend climbs were organized, both locally and in the White Mountains. A large number of new climbers were initiated into the sport in this program. The August Camp was held at Mt. Katahdin in Maine. Although no rock climbing was carried on, two ascents of the well known "Chimney" were made.

A western trip was run to the Sangre de Cristo Range in Colorado, during which a number of climbs were made despite the bad weather. The camp was attended by a number of members who were also members of the American Alpine Club, among them M. Beckett Howorth, Nathaniel L. Goodrich, Albert H. Jackman and Henry S. Hall, Jr. Among the peaks climbed were Spread Eagle Peak (13,400 ft.), Kit Carson (14,100 ft.), Humboldt (14,044 ft.), Crestone Needle (14,191 ft.) and Marble (13,200 ft.).

A number of members, most of whom are also members of the American Alpine Club, attended the camp of the Alpine Club of Canada in the Bugaboo section of the Purcell Range and completed a number of climbs in that region. Several members participated in the Harvard Mountaineering Club's successful trip to Mt. St. Elias last summer, while a number of others made a private trip under Douglas M. Brown, of Meriden, Conn., to the southeastern section of Alaska, where a number of glaciers were measured. The principal emphasis was placed on the measurements of the Muir, McBride, Margery, Grand Pacific and Le Conte Glaciers; and the results of the measurements were transmitted to William B. Osgood Field of the American Geographical Society. Sound recordings of the calving of icebergs from the glacier faces were made with a wire recorder supplied by the General Electric Company. Botanical collections were made for Professor William S. Cooper of the University of Minnesota.

K. A. H.

Canada

Selkirk Range of British Columbia, 1945. In August 1945 A. J. Kauffman, II, with several companions, made a number of ascents in the Southern Selkirks, concerning which the following notes have been received:

"We made a dozen or so climbs, including the first ascent of Mt. Swanzy by the N. ridge. This climb is shorter but technically more difficult than the N.W. arête of Mt. Sir Donald, involving excellent rock climbing as well as ice and snow work. The approach was made over Sapphire Col from Glacier, thence to Lily Glacier, over Lily Col and up snow slopes to a point about 8400 ft. on the N. ridge of Mt. Swanzy. Below that point the ridge does not appear to afford much good climbing. The last 50 ft. of the climb provide a rather difficult and spectacular climax. [N. Brewster, Mr. and Mrs. A. J. Kauffman, II, M. M. Miller. Glacier to Sapphire Col, 2 h.; thence to summit, 9.5 h. A fast party should make the ascent in 9 h. and return to Glacier in 6 h.]

"We made what is believed to be the first traverse of Selwyn-Häsler-Feuz-Michel Pks., from Glacier Circle to Donkin Pass, ascending the E. ridge of Mt. Selwyn. Franzelin traversed Häsler, Feuz and Michel Pks. in 1908, but there is no record of all four summits having been done in one climb. This is also believed

to be the second ascent of Michel Pk. Return to Glacier was made up the flat Bishops Glacier and over rocks E. of Deville icefall. [Mr. and Mrs. A. J. Kauffman, II, L. Sosman, R. D. Watson. Glacier Circle to Mt. Selwyn, 8 h. Thence to Donkin Pass, 7 h., where a bivouac was made. Total time for trip, 35 h.]

"An attempt was made to reach the Battle Range after learning that a group of prospectors had cut a trail from Flat Creek over Flat Creek Pass and down Incomappleux River past Battle Creek. There was once a trail connecting Flat Creek with Arrow Lakes, but it is now completely overgrown. The prospectors had cut a good trail as far as the base of Mt. McBean, but five miles of almost impossible bush intervened between this point and Battle Creek. We made the ascent of a little unnamed peak next to Tomatin Pk., and climbed a ridge from which we photographed unnamed mountains in the Van Horne névé. [Mr. and Mrs. A. J. Kauffman, II, Mrs. F. Schiesser, L. Sosman.]"

Battle Range, 1946: Further Attempts. In 1946 L. M. Erskine, Jr., and T. Baker attempted to reach the Battle Range from Beaton, on upper Arrow Lake, via the Incomappleux River. A small glacier was found on the N. side of the pass between Poole and Boyd Creeks, but the Boyd-Silvertip and Boyd-Westfall passes were crossed, although no satisfactory route to the objective peaks was discovered. A second attempt via Kellie Creek resulted in the ascent of the highest point (9000 ft.), locally known as Battle Mtn., on the W. end of the range. A cairn was found on the summit. Alders and windfalls prevented the party from reaching Battle Creek. A final attempt to cross the Boyd-Kellie ridge failed because of a 200-ft. wall of loose rock in a recently abandoned cirque.

Members of both the 1945 and the 1946 parties believe that the old routes by snow passes southward from Glacier are no longer feasible with packs owing to ice melting away from head walls.

Additional information concerning the Battle Range has been received from Elizabeth Kauffman:

"In late August 1946 Norman Brewster, Andy (my husband) and I crossed several high passes and intervening timbered valleys in an attempt to reach the Battle Range. This range lies S. of the Purity Group in the Selkirks; it extends in an E.-W. direction from the Incomappleux River toward the Beaver-Duncan Valley. The region has proved inaccessible to many climbing parties. Most of the peaks are still unclimbed, and the range is unmapped.

"We approached from the S., starting at Beaton, B.C., on the N.E. arm of the upper Arrow Lake. A road follows the Incomappleux for several miles. At the mouth of Poole Creek we left it for an old trail which prospectors have opened up. It rises with a steady, even grade to timberline at the head of the creek valley. A well equipped cabin at about 5000 ft. provided a comfortable first night's stopping point.

"On the second day (August 19th) we reached the high glaciated pass (about 8200 ft.) separating Poole and Boyd Creeks. Here we obtained our first view of the Battle Range, still 15 miles away, dominated by a magnificent, mostly snow-covered peak whose elevation must be over 10,500 ft. During the course of the trip we agreed that this peak should be given a name, preferably for some early explorer of the Selkirks: Mt. Butters seemed especially appropriate to us, and we decided to apply to the proper authorities on our return. By coincidence, this had already been done, and by the time we had returned the mountain had already been given that name.[1]

"The steep, forested valley of Boyd Creek lay between us and another high pass leading toward the Battle Range. Here we were faced with a choice of routes. Rather than drop down and later regain about 3000 ft. elevation, we traversed a high rib of land which curved around the head of the valley. We crossed a glacier, some talus and some snow slopes. All were deceptively steep. A bad slip on my part forced us to hole up for that afternoon on a grassy camping spot at the source of the E. fork of Boyd Creek.

"Meantime, rain and stormy weather had held us up. On August 22nd we continued our traverse, this time on uncomfortably steep scrubby slopes, and finally over lovely alpine meadows. In the afternoon we reached the pass (about 7500 ft.) separating the valleys of Boyd and Westfall Creeks. From this point on, the map became highly inaccurate, and we had to trust entirely to our own observation. We could see that we had to gain the far side of the very steep Westfall Valley, where a high glacier seemed to lead to the Battle Range.

"On the 23rd we followed easy quartzite terraces northward toward the head of the Westfall. To the S.S.E. we could discern a group of fantastically sharp peaks in glaciated country. Later we discovered that these peaks are known locally as the Badshot Range, though Thorington calls them the Trout Lake Group. Their almost perpendicular ridges and pinnacles reminded us of photographs taken in the Bugaboos. The highest peak (Mt. Templeman, 10,000 ft.) appeared to have excellent climbing potentialities. Several lower peaks, of about 8500-9300 ft., closely resembled the sheer walls of Snowpatch Spire. However, our goal was the Battle Range, which lured us on to what must be equally good climbing.

"We suffered a blow when the beautiful quartzite boulevard ended in a 2000-ft. vertical drop down a rock cliff to the floor of the Westfall Valley. Careful climbing downward with heavy packs, and again sidewise on talus, brought us to the foot of the cliff. Here we intended to skirt around to the other side of the valley, still maintaining some altitude. This was a mistake. We wasted most of

[1] The Geographic Board of Canada has recently conferred the name Mt. Butters on the peak of the Battle Range thought by Carpe to attain 10,750 ft.

the afternoon on an uncomfortable traverse through thick brush and slide alder. Finally we had to descend to the creek for a camping spot.

"Here, at least, we knew that no more 'side hill slogging' lay in store for the morrow. On the 24th we ascended an abrupt 4000 ft. to the glacier, first through alders, then up a large fan-shaped basin of talus and scree. By noon we stood on the glacier, where we contemplated the magnificent peaks on the other side.

"A broad white glacier covers part of the S.W. side of Mt. Butters. This would appear to be the logical route of ascent. On the other hand, Mt. Butters' nearest westerly satellite, a wedge-shaped wall of granite, might prove to be an exceedingly difficult climb. Several other sharp peaks also seem difficult. Toward the W., the range tapers off, then rises again in a series of 8000-9000-ft. peaks immediately above the Incomappleux. The most westerly of these has been ascended.

"From where we stood it appeared as though we need only cross the glacier, find a bivouac point and prepare for an ascent of Mt. Butters on the following day. Yet during that short crossing of the glacier our view of the topography changed completely. Our hopes were dashed: 4000 ft. below us lay the deep, wild Kellie Creek Valley, with its high granite flanks, one of the most uninviting sights we had ever seen. We deeply regretted that we had not followed some other approach. The range was close; it had never before been seen by climbers from this angle, but the last obstacle—the need to descend into Kellie Valley—was too great, considering our limited supplies and the few days we had left at our disposal.

"A last attempt to traverse above the valley by crossing a high granite ridge failed. Ascending a steep granite wall, we discovered that its opposite side was overhanging and smooth, for 500 ft., with no feasible route of descent. From here (at about 8600 ft.) we looked E. to the Beaver-Duncan valley and spotted other peaks which must be included in the Battle Range. We retraced our route to Beaton in three days, after using all the time at our disposal and consuming our supplies."

Sir Sandford Area, 1946. A climbing party led by Sterling Hendricks in 1946 reopened the Sir Sandford area, using a new approach from the Columbia by way of Swan Creek, which is the second tributary to the main river on the W. side below Surprise Rapids. The distance from the Columbia Valley to the glaciers below Mt. Adamant is six miles, but trail-cutting and relaying of supplies required eight days. From the head of Swan Creek two easy glacial passes (9500 ft. and 9000 ft.) were crossed to the base of Mt. Sir Sandford, the second ascent of which was made over the "long slope" which the late Howard Palmer had tried for four years. Second ascents of Azimuth Mtn. and Citadel Mtn. were also made, as well as the first ascent of the higher E. peak (10,580 ft.) of Black-

friar Pks. and two minor flanking peaks of the Adamant Group. Observations were made of the retreat of the Sir Sandford Glacier from the positions recorded by Palmer more than 30 years ago.

The expedition terminated unexpectedly with the death of Dr. Haworth, who fell while climbing unroped on relatively easy terrain on Citadel Mtn. Full accounts of these events will appear in *Appalachia* and the *C. A. J.*

J. M. T.

Bugaboos Camp of the A. C. C. The 1946 camp of the Alpine Club of Canada was held during the latter half of July in the Bugaboos of the Northern Purcells, W. of the main range of the Canadian Rockies and S.E. of the Selkirks. Main camp was located at the forks of the Bugaboo Creek, beside the mining cabin there. Transportation to camp was by means of two trucks that followed the very poor road for 27 miles from Spillimacheen on the Cranbrook-Golden highway. All food and camp dunnage, as well as personnel, was brought in by these trucks. The ride in to camp will be long remembered by those who took it, especially the crowd that came in on the first Sunday evening, through the rain and the soaked fir branches.

Three auxiliary camps were pitched some distance from the main camp. One was three miles up Bugaboo Creek, near the snout of Bugaboo Glacier. This camp was located in the forest and was well stocked and provisioned for the upper climbing camp by pack trains. Those who went up the so-called trail to this camp early in the first week had much trouble negotiating a flooded portion of the trail, but by the end of camp this section was well marked and easily travelled. A hard two hours above this camp was the "Boulder Camp," just under Snowpatch Spire. This camp had three or four small sleeping tents, and all food had to be back-packed. Many of those in camp stayed here for one night or more, as the situation was good for climbs of Howser Spire, Bugaboo Spire, Marmolata, Brenta Spire, Pigeon Spire, and even others. The third camp was located five miles up the S. fork of Bugaboo Creek, just under Bugaboo Pass. From this camp each of the five Quintet Peaks was climbed, four of them for the first time.

Ascents were made during camp of the following peaks: each of the Quintets by many persons; several peaks of Crescent Spire by 44 persons in six parties; "Anniversary Peak" by 43 persons in five parties; East Post by 16 persons in two parties; Howser Peak by five persons in one party; Brenta Spire by six persons in two parties; Pigeon Spire by 49 persons in ten parties (this peak was climbed on July 24th by no fewer than 22 persons in five different parties—quite a group of climbers for one peak!); Marmolata by 15 persons in three parties; Howser Spire by ten persons in two parties, each party establishing a new route; Bugaboo Spire by five persons in two parties, one party establishing a new route

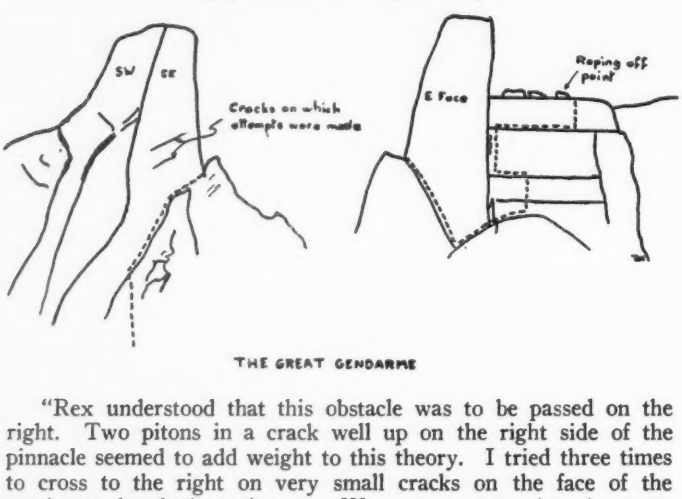
around the gendarme; Taurus Peak (first ascent) by three persons in one party. Further information concerning the new routes on Bugaboo Spire, Howser Spire and Taurus Peak will be found below.

Among A. A. C. members present were Pres. J. C. Case, Vice-Pres. B. B. Gilman, Sec. H. S. Hall, Jr., F. D. Ayres, J. F. Brett, J. E. Brett, E. C. Brooks, Florence Davoll, Beatrice de Lacy, Margaret Finley, Gen. W. W. Foster, C. P. Fuller, F. E. Gaebelein, Ethne Gale, Lillian Gest, E. R. Gibson, S. B. Hendricks, R. C. Hind, Marjorie Hurd, H. S. Kingman, A. H. MacCarthy, J. C. Oberlin, Polly Prescott, H. E. Sampson and D. M. Woods.

D. M. W.

A New Route Past the Bugaboo. The following note has been received from R. C. Hind:

"Climbing with the guidebook in my pocket is not a practice I indulge in. This omission, together with some misunderstanding during a discussion that Rex Gibson and Polly Prescott had on the subject, led to Rex and me making (on 18 July 1946) a new route around the big gendarme on Bugaboo Spire.



THE GREAT GENDARME

"Rex understood that this obstacle was to be passed on the right. Two pitons in a crack well up on the right side of the pinnacle seemed to add weight to this theory. I tried three times to cross to the right on very small cracks on the face of the gendarme, but had to give up. We were so sure that the route was to the right that we did not even consider what we have since discovered to be the usual route.

"More to see where my efforts would have led me than for any other reason, I climbed around the base of the gendarme to the right, as shown in the sketch. The dictum of no less a climber

than Conrad Kain was that this would not go, but we were still sure that we must go to the right. The corner behind looked hopeful, and I climbed up onto a flake and from there to two small ledges on a vertical face. The gendarme now towered on my left, forming a square corner with the face on which I stood. In this corner, about 7 or 8 ft. up, several rocks projected. These appeared quite loose but tested firm. About 10 ft. above was a broad ledge.

"Using the projecting rocks as handholds, and with my feet against the gendarme in a sort of modified layback, I worked my way up until I could reach the platform and haul myself over. A 10-ft. pitch above this brought us out on the ridge, where we discovered a piton and several rope slings. We had climbed up where more sensible people rope down!

"This is the most difficult pitch I have seen in the Canadian mountains and compares with the best of the British rock climbs. I did not get a chance to return and compare this route with the line usually followed, but from descriptions it sounds as if the latter is more delicate and possibly hardly justifiable in view of the exposure and lack of support from the rope."

Howser Spire: New Routes. On 23 July 1946 F. D. Ayres, J. C. Oberlin, Edward Little and D. M. Woods climbed Howser Spire (10,950 ft.) by a new route. From a bivouac at the foot of the W. ridge of Pigeon Spire, they left at 5.30 A.M.; and they made good time across the snow slopes to the base of the very large bergschrund of the E. face. They easily crossed this bergschrund and climbed the rock of the N. E. ridge to its crest, a distance of 200 ft. The snow crest of this ridge was then followed for 600 ft., an extremely steep, narrow and corniced snow ridge. Woods led to the spot where the snow ridge ended in a dark rock tower that forms part of the main ridge. Ayres led from this point on. The face of this tower was ascended, with two difficult pitches requiring pitons for safety. The difficult rock climbing was for a distance of 150 ft. A series of snow-covered ledges and chimneys now led to the main ridge, which was followed without difficulty except at a very large gendarme, passed to the left (E.). The ridge from here to the summit, although spectacular, was quite easy. The summit was reached at 3.30. No record was visible. Descent was by the same route, with two long rappels—one at the gendarme on the main ridge, and the other down the rock tower to the top of the steep snow slope. Each rappel required the two 120-ft. nylon ropes tied together. The snow on the ridge was unconsolidated, and the descent was made slowly with belays. The party arrived at their bivouac at 10 P.M.

On 24 July 1946 Rex Gibson led Tom Johnston, Dave Wessel, Alan Styles, Ethne Gale and Margaret Finlay on another new route on Howser Spire. They camped on a bench several

hundred feet above the "Boulder Camp," left at 4.45 A.M. and went via Snowpatch-Bugaboo col directly to the N. ridge of Howser Spire. They ascended steep snow slopes, traversed around to the W. face of the N. Peak and reached the summit ridge by a 20-ft. wet chimney climb. They were four hours on the ridge, including passage of the big gendarme, and reached the summit at 2.05. Their descent was by the same route, with a rappel down the cliffs to the N. of the wet chimney. They reached camp at 8.30 P.M.

D. M. W.

Taurus Peak: First Ascent. At 7 P.M., on 26 July 1946, Edward Little, Eugen Rosenstock-Huessy and A. C. Fabergé left the main A.C.C. camp for several days to attempt the first ascent of Taurus Peak (10,000 ft.), several miles S. of Bugaboo Pass. They made the ascent and returned to camp on July 29th. They found the going fairly easy, but said that the trek over to Taurus was long. Details will appear in the next issue of the *C. A. J.*

D. M. W.

Purcell Range of British Columbia. The Department of Lands, Victoria, B. C., issued in 1943 a new map which has just become available to the public: 4G Windermere (two miles to one inch, uncontoured). To mountaineers its chief interest will be in the section between Horsethief and Findlay Creeks, but unfortunately it covers only a short stretch of the main watershed and does not extend far enough westward to include Farnham Creek or the Lake of the Hanging Glaciers.

Among the higher mountains, the following are indicated: Mt. Slade, Mt. Farnham, Mt. Delphine, Mt. Peter, Nelson Peak, Monument Peak and Coppercrown Mountain.

A portion of the watershed between Dutch and Farnham Creeks contains the following new names, which apparently may now be considered official: Saffron Peak, Mt. Rowand, Trikootenay Peak, Mt. Morigeau. St. Maur Mountain appears between Dutch and Findlay Creeks.

All elevations agree with those presented in my *Purcell Range of British Columbia* (1946).

The companion map, 4F Lardeau, is soon to be issued on the same basis. It will cover the remaining major portion of the Purcell watershed, and should be watched for with interest.

J. M. T.

Mt. Kerkeslin: First Ascent by W. Face and First Traverse. The second ascent of Mt. Kerkeslin (9790 ft.) was made on 8 July 1946, from about Milepost 22 on the Jasper-Banff highway, about one mile and a half S. of Athabaska Falls. E. R. Gibson and R. C. Hind ascended a stream bed, which developed into a canyon, until it seemed advisable to climb out on the N. or true

right side. They continued via easy goat trails to the head of this canyon, traversed to the right on very steep grass and easy rocks, and then proceeded straight up to a noticeable dip in the S. W. ridge. One smooth pitch of 150 ft., through a pronounced black band, was the only difficulty here.

Having once attained the ridge, they remained on it, overcoming two small overhangs about 10 ft. high. On the summit the record of the first ascent by Slark and Weber was found, with a postcard showing their route up the N. face. Descent was by the N. E. ridge and N. face, with a 60-ft. rope-off down a nasty wet gully through the black band, which extends right across the W. and N. faces of the peak and is most uncompromising throughout. Obviously easy routes may be made from the E., but to get there would involve heavy going. R. C. H.

Rocky Mountains: Elevations in the Maligne Lake Area. A new edition (1942) of the Jasper Park South Sheet (3 mi. to 1 in.) is now available, with the notable addition of contours and elevations E. and N. of Maligne Pass to the park boundary and the railroad. For the first time official figures are given for the peaks surrounding Maligne Lake, and elevations must now be revised upward, as follows: Mt. Brazeau (11,386 ft.); Mt. Henry MacLeod (10,789 ft.); Mt. Unwin (10,723 ft.); Mt. Charlton (10,554 ft.); Monkhead (10,535 ft.); Mt. Mary Vaux (10,502 ft.); Maligne Mtn. (10,475 ft.); Coronet Mtn. (10,340 ft.); Llysfran Pk. (10,304 ft.); Samson Pk. (10,808 ft.); Leah Pk. (9191 ft.); Replica Pk. (9167 ft.).

No elevations are given for Mt. Warren or Valad Pk., but from contour intervals one finds them to exceed 10,800 ft. and 10,600 ft., respectively. An unnamed summit 3 miles E. of Maligne Mtn. is assigned an elevation of 10,176 ft. Three miles S.S.E. of this, and almost due E. of the head of Maligne Lake, is the shale mountain contouring 10,100 ft. ascended under the name of "Mt. Southesk" by the party of D. M. Woods in 1930 (*Mazama,* XII, 72). The Mt. Southesk of the new map is just above 10,200 ft. by contour, and, being much too far for a round trip in one day from Maligne Lake, must be regarded as unclimbed unless future evidence to the contrary is revealed.

Another unnamed peak, 4 miles N. E. of Maligne Mtn. and forming the N. buttress of a pass between the heads of Rocky and Southesk Rivers, rises to 10,277 ft.

In transference of names, the peak in the *Climber's Guide* called Monkhead (*Thumb*) is now Mt. Paul, its contour elevation being just above 9200 ft., while the name Monkhead is given to the loftier summit (10,535 ft.) N. W. of Mt. Warren.

An unnamed double-peak 5 miles E. of Mt. Warren has summits of 10,400 ft. (N.) and 10,200 ft. (S.). A crestline some 6

miles long continues S. E. from this, bearing summits 10,000 ft., 10,000 ft., 10,200 ft., 10,400 ft. and 10,000 ft., the last being 5 miles N. W. of Chocolate Mtn. and the source of Isaac Creek. All of these rise E. of the stream draining the Brazeau glaciers to Brazeau Lake.

The most important unnamed peak in the terminal forks of Southesk River is 10,600 ft. and rises 5 miles S. E. of Southesk Lake. A peak of 10,200 ft. culminates the uplift between the main source of Southesk River and Isaac Creek.

An unnamed peak of 10,000 ft. rises between the highway and Maligne River, in the E. angle between Ranger Creek and Athabaska River. It can undoubtedly be ascended from the road.

There are a number of small lakes at the sources of Rocky and Southesk Rivers, while the glaciation of Maligne Mtn. and lesser summits northwestward along the local watershed between Maligne Lake and Rocky River is greater than recognized hitherto.

From this it is now evident that the Maligne peaks form the most important alpine area E. of the main watershed, and there is at least one good season's work to be done on unclimbed mountains near the S. E. end of Maligne Lake. J. M. T.

Cirque Peak. Mr. George Weed informs us that neither R. F. Curtis nor C. E. Fay took part in the first ascent of this mountain in 1898. Fay and Curtis did not join the party of Nichols, Thompson and Weed during the 15 days beginning 30 July 1898, having left them at Laggan for their exploration of Yoho Valley and attempt to climb Mt. Balfour from that valley. See *Appalachia,* IX, 10-11, and the Guidebook (1940 edition).

Mexico

Four Peaks in Eight Days. During May 1946 William Hackett and A. B. Wheeler ascended Mexico's four highest mountains in a period of eight days: 12 May, Popocatepetl (17,882 ft.); 13 May, Nevada de Toluca (15,120 ft.); 16 May, Pico de Orizaba (18,700 ft.); 19 May, Ixtaccihuatl (17,328 ft.). They had left Los Angeles by car on 8 May 1946.

Popocatepetl. The earliest English version of the first ascent on Popocatepetl, by Diego de Ordaz in 1520, is found in a chapter entitled "The hill called Popocatepec" in *The Pleasant History of the Conquest of the Weast India* (London, 1578), a free translation of the second part of López de Gómara's *Historia General de las Indias* (1552). This account is little known to mountaineers, and while it throws no new light on the event, its almost Old Testament quaintness justifies our presenting it here:

> "There is a hill eyght leagues from *Chollola,* called *Popocatepec,* which is to say, a hill of smoke, for manye

tymes it casteth out smoke and fier. *Cortez* sente thither tenne Spanyardes, with manye *Indians,* to carry their vituall, and to guide them in the way. The ascending was very troublesome, and full of craggie rockes. They approached so nigh the toppe, that they heard such a terrible noyse which proceeded from thence, that they durst not goe unto it, for the ground dyd tremble and shake, and great quantitie of Ashes whyche disturbed the way: but yet two of them who seemed to me most hardie, and desirous to see straunge things, went up to the toppe, because they would not returne with a valueless aunswere, and that they myghte not be accompted cowardes, leaving their fellowes behinde them, proceeded forwards. The *Indians* sayd, what meane these men: for as yet never mortall man tooke such a journey in hande.

"These two valiant fellowes passed through ye desert of Ashes, and at length came under a greate smoke verye thicke, and standing there a while, the darknesse vanished partly away, and then appeared the vulcan and concavetie, which was about halfe a league in compasse, out of the whiche the ayre came rebounding, with a greate noyse, very shrill, and whistling, in short that the whole hil did tremble. It was to be compared unto an oven where glass is made. The smoke and heate was so greate, that they could not abide it, and of force were constreyned to returne by the way that they had ascended: but they wer not gone farre, when the vulcan began to lash out flames of fier, ashes and imbers, yea and at last stones of burning fier: and if they had not chanced to finde a rocke, where under they shadowed themselves, undoubtedlye they had there bin burned.

"When with good tokens they were returned where they left their fellowes, the other *Indians* thoughte, that that place was an infernall place, where all such as governed not well, or used tyrannie in their offices, were punished when they dyed, and also believed, that after their purgation, they passed on to glory.

"This vulcan is like unto the vulcan of *Cicilia,* it is high and round, and never wanteth Snowe about it, and is seene a farre off in the nighte, it lasheth out flames of fier.

"There is neare aboute this hyl many Cities, and *Huexozinco* is one of the mightiest.

"In tenne yeares space this straunge hill of workyng dyd expell no vapoure or smoke: but in the yeare 1540 it beganne agayne to burne, and with the horrible noyse thereof, the neyghbours that dwelte foure leagues from thence were terrifyed, for the especiall straunge smokes that then were seene, the like to their predecessors hadde not bin seene.

"The ashes that proceeded from thence came to *Huexozinco, Quelaxcopan, Tepiacac, Quauhquecholla, Cholollа,* and *Tlaxcallan,* which standeth tenne leagues from thence, yea some say, it extended fifteen leagues distant, and burned the herbes in their gardens, their fieldes of corne, trees, and clothes that lay a drying."

J. M. T.

EUROPE

Matterhorn. During the summer of 1946 an additional ascent of the North Face was made. The full list is now as follows: (1) Franz and Toni Schmid, 31 July 1931; (2) Schmidbauer and Leis, 16-19 July 1934; (3) Dr. Bauer and *Hermann Steuri,* 24 July 1934; (4) Alfred Sutter and Berchtold Hediger with *Alex Graven* and *Alex Taugwalder,* 12 July 1946.

Word from Munich. Mr. W. R. Rickmers, writing from Munich, states that about half of the Alpine Museum has survived, but the Alpenvereinsbücherei of 40,000 volumes, as well as all maps, prints and manuscripts (among them the *Führerbücher*), was totally destroyed.

Early American Ascents. In the *Führerbuch* of Christian Almer, which contains extensive records of Meta Claudia Brevoort and W. A. B. Coolidge through the period from 30 July 1868 to 1 August 1884, one finds the following additional notes:

Christian Almer has brought us quite safely and pleasantly over the Strahleck. Beginners in such work, we can only record our gratitude for his care and attention.

LEWIS B. HALL, Albany, N. Y.
J. S. BIGELOW, Boston

Grimsel, Aug. 13, 1870

Since writing the preceding page, Christian Almer has been my sole guide over the Oberaarjoch, also to the Oberaarhorn, to the *Jungfrau* (snow very heavy) and the next day to the *Finsteraarhorn* (the mountain being dangerous from new snow). In all cases I have found him perfectly safe, cautious and capable.

LEWIS B. HALL

Since going over the Strahleck pass with Almer, I have had him as my guide at Zermatt—he has taken me up the Cima di Jazi, & the St. Théodule pass and I can only repeat what I have said on a former page as to his entire capability as guide for any mountain or pass in Switzerland.

J. S. BIGELOW

Sept. 10, 1870

Christian Almer has been with us from Visp and Zermatt over the Pass St. Théodule and Col du Géant to Chamonix and over the Tête Noire, and I have found him a most competent and kindly guide, and pleasant companion.

E. Pierson Beebe, Boston

Martigny, 15 September, 1870

Eggischorn, Aug. 11, 1877. Christian Almer has made the ascent of the Jungfrau & Finsteraarhorn as guide to Wm. H. Hunt of Concord, Mass., & the undersigned. Sufficient has already been written to establish his fame as a guide—we, as are all who have to do with him, were perfectly satisfied in all respects (A very complete contrast to Almer is his colleague D. Inabnit, who is altogether too weak to undertake such tours, & has not the same fine character as Almer). The ascent of the Finsteraarhorn was made from the new Faulberg Hütte in 5 hours with Almer alone, & too much cannot be said in praise of his conduct through the entire affair.

Theodore Baker, Concord, Mass.

The Visitors' Books at the Nesthorn-Bietschhorn Hotel at Ried (*A. J., 55, 262*) contain the following:

Sept. 4, 1869. Stephen W. Early, of Brooklyn, coming from Macugnaga via the Eggishorn, and leaving to cross the Petersgrat to Interlaken.

Sept. 9, 1870. Franklyn Taylor and his three young sons with Ulrich Lauener, over the Petersgrat to Ried.

J. M. T.

Of General Interest

Articles in The Geographical Journal. Several interesting articles have appeared recently in *The Geographical Journal* (London).

"Search for Power in the British Columbia Coast Range," by R. C. Farrow, Chief Hydraulic Engineer of the Water Rights Branch of the Province of B. C., in the issue for September-October 1945, deals with three seasons' field work in the years 1928, 1929 and 1930 in the Coast Range between the Fraser and Skeena Rivers. The problem was to estimate the reserves of water power and their possible harnessing, from the lakes and glacial rivers of this rugged and unsurveyed area. Without going into details, the accounts of the struggles of the several survey parties to get about in this wild country are of particular interest to mountaineers who have to face similar difficulties in approaching the peaks of the Coast Range. The general feeling among the surveyors

was that this was the most formidable country they had ever worked in. Most of their time was spent in the Chilko Lake, Tatlayoko Lake and Homathko River sectors. (Conditions there remain unchanged in 1946.)

"Researches on Snow and Ice, 1918-1940," by H. W. Ahlmann, appeared in the January-February 1946 issue. The areas covered include the Jotunheim in southern Norway and the Karsa Glacier farther N., the Vatnajökull in Iceland, Clavering Island off the E. coast of Greenland, and some glaciers in Spitsbergen and North East Land. The article is well illustrated and has numerous excellent diagrams and sketch maps. There are comments at the end by N. E. Odell, G. Seligman, Dr. Federov and other well known authorities.

In the March-April 1946 issue is an article on "The 1945 Eruption of (Mt.) Ruapehu" (New Zealand), by C. A. Cotton. To one who has climbed this long somnolent volcano, with its crater filled by a lake some 600 yards in diameter, this recurrence of volcanic activity is indeed a surprise. There are several fine close-up aerial photographs of the various phases of the eruptions. In the same issue are three articles on the Arctic flights of the British R.A.F. Lancaster *Aries* in May 1945, over the North Pole, North Magnetic Pole, Iceland, Greenland, Ellesmere Island, and routes over northern Canada. H. S. H., Jr.

Mountain Paintings. Visitors to Washington may be interested in the following. At the *National Museum,* grouped inside the entrance, are two large paintings of the "Grand Canyon of the Yellowstone," one by Thomas Moran (1837-1926), the other by Lucien W. Powell (1846-1930); also "Top of the Continent" (Mt. McKinley), painted by Sydney Lawrence in 1914; also a smaller painting by Moran, "Mist in Kanab Canyon, Utah." At the *Corcoran Gallery* are two paintings of "Monadnock," one by Abbott H. Thayer (1849-1921), the other by Charles H. Woodbury (1864-1940); "Simplon Pass," by John Singer Sargent (1856-1925); and two large paintings by Albert Bierstadt (1830-1902), "Mount Corcoran" and "Last of the Buffalo." The same gallery also contains a delightful interior of the German school, "The Forester at Home," by Ludwig Knaus (1829-1920).

At the *Art Institute, Chicago,* there are four paintings of interest to mountaineers: "An Alpine Scene" (Wetterhorn), by Gustave Courbet (1819-77); "Le Grand Muveran," by Ferdinand Hodler (1853-1918); "The Catskill Mountains," by George Inness (1825-94); and "Mount Washington," by Winslow Homer (1836-1900). J. M. T.

A Blessing for Climbers and Their Equipment. A translation of the *Benedictio Instrumentorum ad Montes Conscendendos* which

the late Pope Pius XI approved and had inserted in the *Rituale Romanum* has been received from our member Anderson Bakewell, S.J.:

> Bless, we beseech Thee, O Lord, these ropes, ice-axes, pitons and other instruments; so that those who will use them on the rough cliffs of the mountain in ice, snow and storms may be preserved from any fall or danger, may successfully reach the summit and safely return to their own, through Jesus Christ, Our Lord.
>
> Protect, O Lord, through the intercession of blessed Bernard, whom Thou hast given as a patron to those who dwell and travel in the Alps, these servants of Thine; and grant that as they ascend these heights they may be made strong to reach the mountain which is Christ, through the same Christ, Our Lord. Amen.

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